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GENERAL ZOOLOGY

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or

SYSTEMATIC NATURAL HISTORY

by

GEORGE SHAW, M.D. F.R.S.&c.

WITH PLATES

from the first Authorities and most select specimens

Engraved principally by

MR. HEATH.

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VOL. II. Part 1.

MAMMALIA.

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GENERAL ZOOLOGY.

VOLUME II.—PART I.

MAMMALIA.

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GENERAL ZOOLOGY.

VOL. III, or the next Volume, which will be published with all convenient expedition, will contain the WHOLE OF THE AMPHIBIA; and will, of course, comprise the Tortoise, Frog, Lizard, and Serpent Tribes.

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ERRATA.—PART I.

P. 28. l. 4. for *seven in circumference* read *seven inches in circumference*.

P. 11. l. 1. for *pentadactylis* read *pentadactylis*.

Directions for placing the Plates in vol. II. part I.

The Vignette to Part I. represents the Harvest Mouse of its natural size.—Page 62.

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COMMON

PORCUPINE.

QUADRUPEDS.

ORDER

G L I R E S.

HYSTRIX. PORCUPINE.

Generic Character.

<i>Dentes Primores duo, oblique scissi.</i>	<i>Front-teeth two, both in the upper and under jaw, obliquely cut.</i>
<i>Molares octo.</i>	<i>Grinders eight.</i>
<i>Digiti pedum 4—5.</i>	
<i>Corpus spinis pilisque tectum.</i>	<i>Body covered with spines intermixed with hairs.</i>
	<i>Four toes on the fore-feet; five on the hind.</i>

COMMON PORCUPINE.

Hystrix Cristata. H. palmis tetradactylis, plantis pentadactylis, capite cristato, cauda abbreviata. Lin. Syst. Nat. p. 76.

Long-spined Porcupine, with tetradactylous fore-feet, pentadactylous hind-feet, crested head, and short tail.

*Hystrix. Gesn. Quadr. p. 563. Aldr. dig. p. 471. fig. p. 474.
Jonst. Quadr. p. 163. t. 68. Raj. Quadr. 206.*

Le Porc-Epic. Buff. 12. p. 402. pl. 51, 52.

Crested Porcupine. Pennant Quadr. 2. p. 122.

WE have before observed, that in an arrangement of quadrupeds, from their obvious external characters alone, without reference to the form

and disposition of the teeth, the Porcupine and the Hedgehog might be placed together; but such is the dissimilarity of these organs, that the one must of necessity belong to the Linnaean order Feræ, and the other to that of Glires.

The singular appearance of the Porcupine, so different from that of the generality of quadrupeds, must in the earliest ages have attracted the attention even of the most incurious; the variegated spines or quills with which it is covered naturally suggesting the idea of a fierce and formidable animal: it is, however, of a harmless nature, and the quills are merely defensive weapons, which, when disturbed or attacked, the animal erects, and thus endeavours to repel his adversary.

The general length of the Porcupine is about two feet from head to tail, and that of the tail about four inches. The upper parts of the animal are covered with long, hard, and sharp quills; those towards the middle and hind part of the body being longer than the rest, and measuring from nine or ten to twelve or fifteen inches in length: they are very sharp-pointed, and are variegated with several alternate black and white rings: the root, or point of attachment, is small: the head, belly, and legs, are covered with strong dusky bristles, intermixed with softer hairs: on the top of the head the hairs are very long, and curved backwards in the manner of a ruff or crest: the ears are short and rounded: the nose blunt; the upper lip divided by a strongly-marked furrow; the two fore teeth, both above and below,

extremely large and strong: the fore feet have four toes; the hind feet five; all armed with strong crooked claws; the tail is covered with short and rather flattish quills, which are often abrupt or truncated, rather than pointed at the extremities. This animal is a native of Africa, India, and the Indian islands: it is also found in some of the warmer parts of Europe, and is said to be not very uncommon in Italy and Sicily; but is supposed to have been originally imported into those parts of Europe from other regions. Mr. Brydone, in his tour through Sicily, informs us, that in the district about Baiæ the Porcupine is frequently seen; and that in a shooting party on the Monte Barbaro he and his companions killed several, but that the novelty of the amusement was its chief merit, and that he would not at any time give “a day’s partridge for a month porcupine-shooting.” He adds, that the party dined on porcupine that day, but that it is “extremely luscious, and soon palls upon the appetite.”

The power of darting its quills with great violence, and to a considerable distance, so confidently ascribed to the Porcupine by the writers of antiquity, as well as by some of the moderns, seems now pretty generally exploded: it perhaps originated from an accidental circumstance; and it is surely not improbable that the Porcupine possessing, like other quadrupeds, the power of corrugating or shaking the general skin of its body, may sometimes by this motion cast off a

few of its loose quills to some distance, and thus slightly wound any animal that may happen to stand in its way ; and this may have given rise to the popular idea of its darting them at pleasure against its enemies. That it really does cast them off occasionally with some degree of violence there is no reason to doubt*. “ The strongest and shortest of the quills (say the anatomists of the French Academy) are most easily detached, and are those which the animals dart against the hunters, by shaking their skin as dogs do when they come out of the water. Claudio accordingly remarks, that the Porcupine is himself the bow, the quiver, and the arrow, which he employs against the hunters.” The Count de Buffon reproaches the gentlemen of the academy with their credulity on this subject, and observes, that they seem to have adopted the fable for no other purpose than that of quoting Claudio ; since, by their own account, it appears that the Porcupine does not dart his quills to a distance,

* “ Upon the smallest irritation it raises its quills, and shakes them with great violence, directing them to that quarter from whence it is in danger of being attacked, and striking at the object of its resentment with its quills at the same time. We have observed, on an occasion of this sort, at a time when the animal was moulting or casting its quills, that they would fly out to the distance of a few yards, with such force as to bend the points of them against the board where they struck ; and it is not improbable that a circumstance of this kind may have given rise to an opinion of its power to use them in a more effectual manner.”

but that they only fall off when he shakes himself. The lines of Claudian are these :

Ecce, brevis propriis munitur bestia telis,
Externam nec querit opem, fert omnia secum,
Se pharetra, sese jaculo, sese utitur arcu!

Arm'd at all points in Nature's guardian mail,
See the stout porcupine his foes assail ;
And, urg'd to fight, the ready weapons throw,
Himself at once the quiver, dart, and bow !

Some authors have gone so far as to assert that the Porcupine can dart his quills with such force as to penetrate a plank of considerable thickness. It is agreed on all hands, however, that the animal, conscious of the power of his armour, generally pushes against his adversary when assaulted, and can thus sometimes wound pretty smartly with his spines, and this is said to be particularly the case with a small species found in North America, and known by the name of the Urson, or Canada Porcupine.

Dr. Patrick Brown, in his Natural History of Jamaica, speaking of the common Porcupine, which, he says, is sometimes brought into that island from the coast of Guinea in the African ships, observes, that "the force and mechanism with which this animal darts its long thorns at its enemy, when it is enraged, is really admirable : nor are the infinitely small setæ these are beset with less remarkable, by which they stick in the flesh with more obstinacy than a simple body of the same form would do. These little setæ are

are very observable to the touch ; for, on holding a thorn in your hands, and endeavouring to pull equally with both, you will find the thickest end to glide with much more ease through your fingers than the other."

The Porcupine feeds principally on roots, fruits, barks, and other vegetable substances : it inhabits holes or subterraneous retreats, which it is said to form into several compartments or divisions, leaving only a single hole or entrance. It sleeps much by day, and makes its excursions for food during the night. The female produces two young at a birth, and these, if taken early, are said to be easily tamed.

The Porcupine admits of considerable variety as to the length and proportion of the quills in different specimens and from different countries : the long crested bristles on the back of the head, in particular, are much more conspicuous in some than in others.

PREHENSILE PORCUPINE.



PREHENSILE PORCUPINE.

Hystrix Prehensilis. H. pedibus tetradactylis, cauda elongata prehensili seminuda. Lin. Syst. Nat. p. 76.

Short-spined Porcupine, with tetradactylous feet, and long half-naked prehensile tail.

Hystrix cauda longissima tenui, medietate extrema aculeorum experte. Briss. Quadr. p. 129.

Le Coendou à longue queue. Buff. suppl. 7. p. 305. pl. 78.

Brasilian porcupine. Pennant Quadr. 2. p. 124.

THIS is an American species, and is found in many of the hotter parts of that continent; particularly in Brasil, where it inhabits woods, and climbs trees; clinging occasionally to the branches by its tail, in the manner of some of the Opossums and Monkies. It is said to feed not only on fruits of various kinds, but also on birds. It sleeps during the greater part of the day, concealing itself in the hollows of trees, or beneath their roots. Its voice, according to Marcgrave, resembles the grunting of a pig. Its general length is about a foot, and the tail about eighteen inches. The whole animal, except on the belly and insides of the limbs, is covered with short, strong, and very sharp spines, of which the longest measure three inches, and are white, barred towards the points with black. The colour of the hair with which the under parts are covered is a dusky brown. The head is small; the nose extremely blunt; and the teeth very large and strong: the ears short, moderately large, and rounded: the feet have four toes each, with strong claws,

and a tubercle in place of a fifth toe: the tail is covered with spines for about a third part of its length; the remainder being nearly naked, and strongly prehensile. In the Leverian Museum is a very fine specimen of this animal.

MEXICAN PORCUPINE.

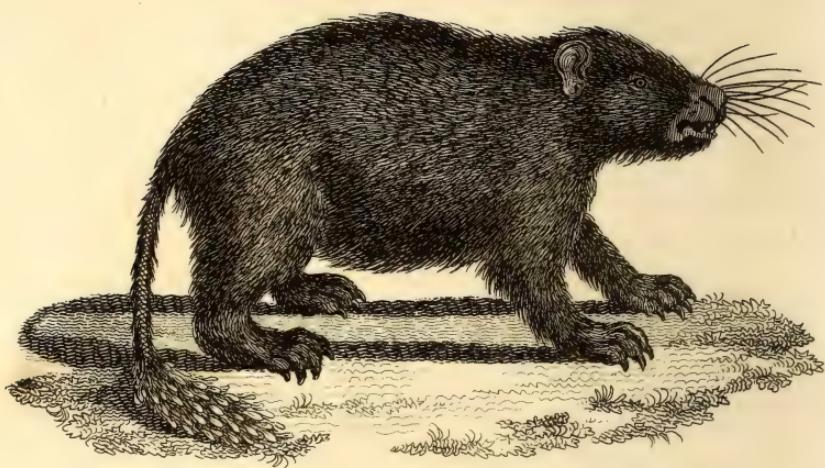
Hystrix Mexicana. *H. pedibus tetradactylis, cauda mediocri-*
Short-spined Porcupine, with tetradactylous feet, and tail of moderate length.

Hystrix Novæ Hispaniæ. *H. aculeis apparentibus, cauda brevi,*
et crassa. Briss. Quadr. 127.

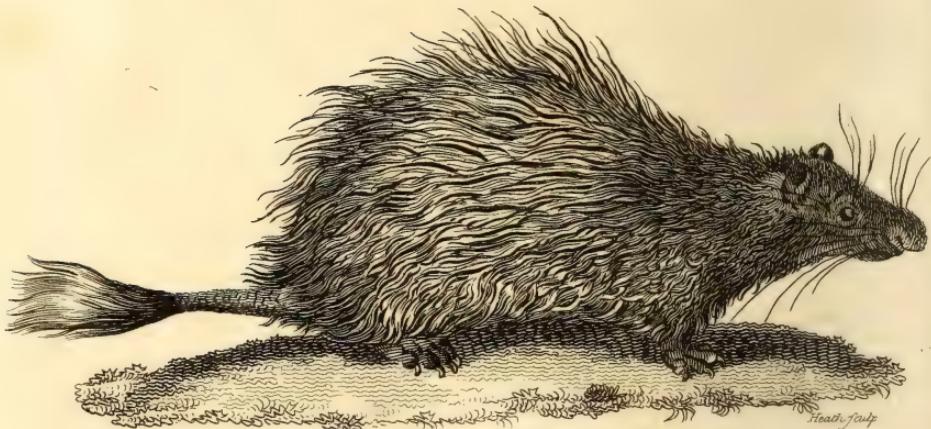
Le Coendou. Buff. 12 p. 418. pl. 54.

Mexican Porcupine. Pennant Quadr. 2. p. 125.

THE Mexican Porcupine, which is placed as a variety of the *Hystrix prehensilis* in the Gmelinian edition of the *Systema Naturæ*, seems to be justly considered by Mr. Pennant as a distinct species. It is as large, according to Hernandes, as a middle-sized dog, and is of a dusky brown colour, with very long bristles intermixed with the fur: the spines, with which the upper parts are covered, are about three inches long, slender, and varied with white and yellow, and are not very apparent through the hairs, except on the tail, which is much thicker and shorter in proportion than in the Brasilian Porcupine, and, like that, is naked, or without spines from the middle to the end. This animal inhabits the hilly parts of Mexico, residing in woods, and feeding,



IRIDESCENT PORCUPINE.



BRUSH-TAILED PORCUPINE.

like the former, on fruits, &c. It is said to be easily tamed. The Indians apply the quills to the forehead in cases of headache: they are said to adhere till they are filled with blood, and then to fall off; thus relieving the complaint in a most efficacious manner. Buffon seems to have considered this species as the same with the *Hystrix prehensilis*. It is said to have a strong and disagreeable odour. The female produces two young at a birth, in the hollows of trees.

IRIDESCENT PORCUPINE.

Hystrix Macroura. H. pedibus pentadactylis, cauda longissima, aculeis clavatis. Lin. Syst. Nat. p. 77.

Short-spined Porcupine, with pentadactylous feet, and very long tail, tufted at the extremity with clavated bristles.

Hystrix Orientalis. H. cauda longissima, aculeis undique obsita, in extremo paniculata. Briss. Quadr. 131.

Porcus aculeatus sylvestris, &c. Seb. I. p. 84. pl. 52.

The rice-tailed Porcupine.

Long-tailed Porcupine. Pennant Quadr. 2. p. 123.

THE iridescent Porcupine is an animal of a very extraordinary appearance. It is of a very thick form, and is coated with short, stiff, needle-like bristles, or small spines, which, according to the different directions of the light, exhibit changeable colours, appearing either of a gilded green, or of a reddish tinge. The head is thick and short; the snout blunt; the eyes large; the ears rather small, rounded, and smooth within; the whiskers long, and the upper lip divided like

that of a hare: the feet, according to Seba, are all furnished with five toes, of which the exterior is shortest: the claws are thick and strong: the tail is very long, and covered with short spiny hair, like that on the body, except at the extremity, which is tufted with a thick brush of quills of an extraordinary form, consisting each of a long slender stem, swelling out at intervals into knots resembling grains of rice, and tipped with a similar knot: this tufted extremity of the tail is of a silvery white colour, and the quills which compose it are of different lengths. It inhabits the islands of the Indian Archipelago, and resides in woods. It appears to have been first described by Seba, whose elegant figure has been generally copied by succeeding writers. If we except the gilded or Cape Mole, it seems to be almost the only quadruped yet known with changeable-coloured hair. Seba informs us that his figure of this animal was taken from a very fine and perfect specimen in the Museum of Mr. Vincent of Harlem, he having only a specimen of the tail in his own collection. He adds, that the species is mentioned by Bontius; and that others of good credit affirm that they have seen it in the Indian islands; and that in its gall-bladder is found a calculus which is esteemed equal in virtue to that of the Malacca Porcupine (Malacca Hedgehog), and is called by the Portuguese, *Piedra de Puerco*.

BRUSH-TAILED PORCUPINE.

Hystrix Fasciculata. H. palmis tetradactylis, plantis petadactylis, cauda mediocri apice setis complanatis fasciculato.

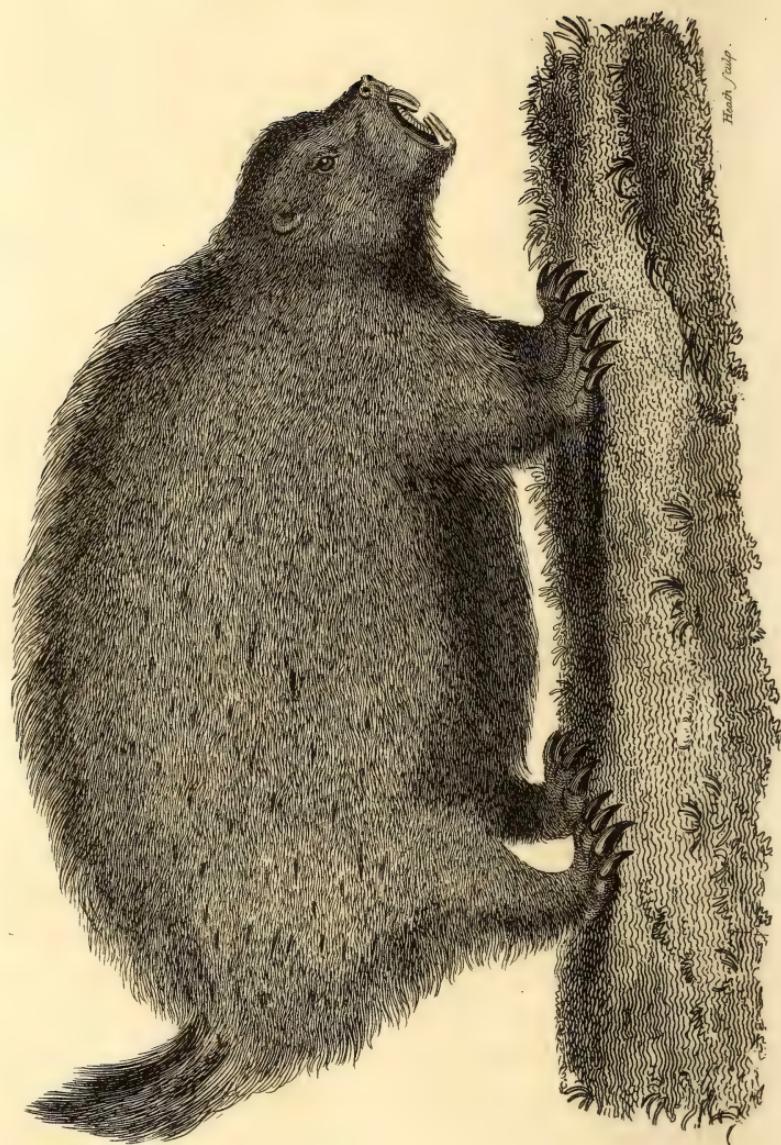
Porcupine with tetradactylous fore-feet, pentadactylous hind-feet, and tail terminated by a tuft of flattened bristles.

Le Porc-épic de Malaca. *Buff. suppl. 7. p. 303. pl. 77.*

THIS animal, which is described and figured in the 7th supplemental volume of the Count de Buffon's History of Quadrupeds, is a native of Malacca. It differs, according to that author, from the Common Porcupine in several particulars, and especially in the form and length of its tail, which is naked, scaly, about a third of the length of the body, and terminated by a tuft of long flat hairs, or rather small white laminæ, resembling strips of parchment. The body measures fifteen or sixteen inches, and is consequently less than that of the European Porcupine; the head also is longer in proportion, and the snout, which is covered with a black skin, is furnished with whiskers of five or six inches in length: the eyes are small and black: the ears smooth, round, and naked: there are four toes, united by a common membrane, on the fore feet, with only a tubercle in place of a fifth toe: the hind feet have five toes, united in a similar manner by a membrane somewhat smaller than that of the fore feet: the legs are covered with blackish hair: the flanks and upper parts of the body are whitish, and covered with spines shorter than those of the

Common Porcupine, and of a peculiar shape, being a little flattened, and channeled with a longitudinal furrow ; they are white at the point, and black in the middle, and many of them are black above and white below ; and from this mixture results a varying cast of black and white over the whole body of the animal.

This species, like others of its genus (which Nature seems to have provided with defensive weapons only), possesses a kind of instinctive fierceness : when approached it stamps with its feet, and appears to inflate itself, raising and shaking its quills. It sleeps much by day, and is active only by night. It eats in a sitting posture ; holding apples and other fruits between its paws, peeling them with its teeth : it is particularly pleased with stone fruits, and especially with apricots : it will also eat melons, and is never observed to drink. The above description was drawn up from two of these animals in a living state, at Paris, in the year 1777.



CANADA

PORCUPINE

CANADA PORCUPINE.

*Hystrix Dorsata. H. palmis tetradactylis, plantis pentadactylis,
dorso præcipue spinoso, cauda subabbreviata.*

Short-spined Porcupine, with very long fur, tetradactylous fore-feet, pentadactylous hind-feet, spiny back, and shortish tail.

*Hystrix Hudsonis. H. aculeis sub pilis occultis, cauda brevi et
crassa. Briss. Quadr. 128.*

Hystrix dorsata. Lin. Syst. Nat. p. 76.

L'Urson. *Buff. 12. p. 426. pl. 55*

Canada Porcupine. *Pennant Quadr. 2. p. 126.*

THIS species is a native of the northern parts of America, and is not uncommon in Canada. It is a short thick-bodied animal, approaching somewhat to the form of a Beaver, and is remarkable for the length and fulness of its fur, which is soft, of a dusky brown colour, and intermixed with longer and coarser hairs with whitish tips: the head is short; the nose blunt, the ears small and rounded, the teeth very strong, the limbs short, the feet armed with strong, crooked, sharp-pointed claws, hollowed or channelled beneath: on the fore feet are four toes, and on the hind five: the general length, from nose to tail, is about a foot and half: of the tail six inches. Edwards compares the size to that of a fox, though the shape is widely different. The spines are nearly hid in the fur, and are only visible on a close inspection: they are situated on the head and upper parts, as well as on the tail: the longest are those on the back, which measure about three inches, while those on the other parts are proportionally shorter:

they are strong and sharp-pointed, and so formed as to appear, when examined with a magnifier, as if barbed at the tips with numerous, small, reversed points or prickles, and are so slightly attached to the skin as to be loosened with great ease: and the animal will sometimes purposely brush against the legs of those who disturb it, leaving several of the spines sticking in the skin.

The first figure of the Canada Porcupine seems to have been given by Edwards, from a specimen brought from Hudson's Bay. It is said to feed principally on the bark of the juniper tree. It drinks by lapping, in the manner of a dog. It resides in holes under the roots of trees, on which, like some others of this genus, it often climbs, and is thus killed by the American Indians, who consider it as a useful article of food: they also use the quills by way of fringes, and for the purpose of ornamenting their boxes, &c.

Though the natural or genuine colour of this animal is brown, yet it is sometimes found perfectly white, or cream coloured: two very elegant specimens in this state occur in the Leverian Museum.

The Count de Buffon, with peculiar absurdity, affects to entertain a doubt whether the *iridescent porcupine* (*H. macroura. Lin.*), described and figured by Seba under the title of *Histrix Orientalis singularis*, may not in reality be this species, and observes, that this would not be the only instance in which Seba has exhibited American animals as

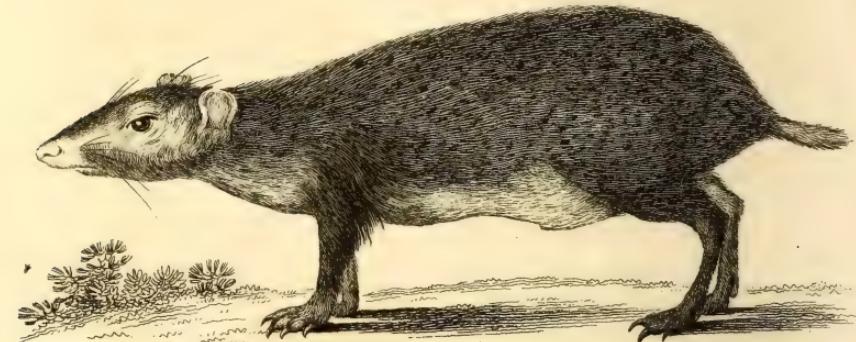
as belonging to the East Indies. He then goes on to say, that the resemblances are very great, and the differences but slight. On the contrary, whoever takes the pains to collate the two animals will readily perceive that hardly any quadrupeds of the same genus can exhibit more strikingly different characters.

CAVIA. CAVY.

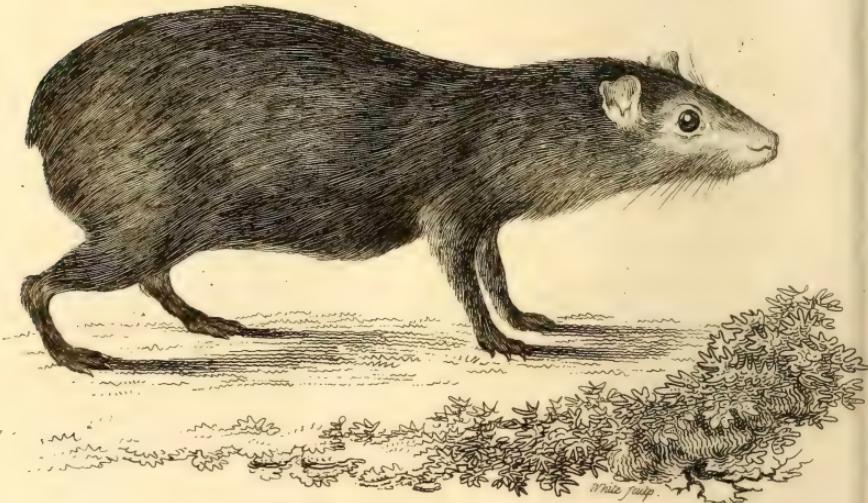
Generic Character.

<i>Dentes Primores duo cuneati.</i>	<i>Front-teeth two, wedge-shaped.</i>
<i>Molares octo.</i>	<i>Grinders eight.</i>
<i>Digitæ plantarum 3—5. palmarum 4—5.</i>	<i>Toes on the fore feet from four to five: on the hind feet from three to five.</i>
<i>Cauda abbreviata aut nulla.</i>	<i>Tail very short, or none.</i>
<i>Claviculæ nullæ.</i>	<i>Clavicles, or Collar Bones, none.</i>

THE animals of this, as well as of some other lately instituted genera, in the present order *Glires*, were by Linnæus comprised under the genus *Mus*; but since many animals of a very different habit, or general aspect, were thus crowded into one extensive genus, it was at length thought advisable, and even necessary, to divide them into distinct genera; instituted from the structure of the feet, the proportion of the limbs, &c. the teeth being nearly the same in all. The animals of the genus *Cavia* have generally a slow, and sometimes a leaping pace: they live, like the rest of the *Glires*, on vegetable substances, and in their natural state inhabit excavations under ground, or beneath the roots of trees; or other



ACHOUCHI.



AGUTI.

recesses which they either find ready prepared, or form for themselves. The most familiar example of this genus is the well-known little animal, called the Guinea-Pig, or Cavia Cobaya.

VARIEGATED CAVY.

Cavia Cobaya. *C. ecaudata ex albo et rufo vel nigro variegata.*

Lin. Syst. Nat. Gmel. p. 122.

Tailless Cavy, generally variegated either with black and white, or rufous, &c. &c.

Mus Porcellus. *M. cauda nulla, palmis tetradactylis, plantis tridactylis.* *Lin. Syst. Nat. p. 79.*

Cuniculus Indicus. *Nieremb. Hist. Nat. p. 160. Aldr. dig. p. 390, 391. Jonst. Quadr. 162.*

Le Cochon D'Inde. *Buff. 8. p. 1. pl. 1.*

Restless Cavy. *Pennant Quadr. 2. p. 89.*

THIS species, from the beauty and variety of its colours and the neatness of its appearance, must have early attracted the attention of those Europeans who first visited South America; even the wild or native specimens, being variegated with black, white, reddish, or yellow, in the same manner as those which are so frequently reared in Europe. This little animal is very easily rendered tame, but is seldom observed to shew any very lively attachment to its benefactors; and is not distinguished by any remarkable degree of docility: it is, however, cleanly, harmless, and of a timid disposition. In a state of confinement it breeds almost every two months; and often produces a

very numerous offspring at a birth*. The young very soon acquire the necessary degree of strength and perfection of their species, though they continue to grow till seven or eight months. They, therefore, require but for a short time the attention of the parent, and even in the space of twelve hours can run about with as much agility as the full-grown animals. Since the female is furnished with only two teats, and yet produces a numerous offspring, it might at first appear as if Nature had but ill provided or proportioned the power of nourishment for the young; this, however, is by no means the case, since the young, in a few hours after birth, are capable of eating various vegetable substances, and consequently require but very little assistance on the part of the mother. In their native regions of South America they are chiefly found in Brasil. They willingly feed on a great variety of vegetable substances, and may be successfully reared on parsley, cabbage, sowthistles, &c. and if permitted to range in a garden, will readily support themselves, without any assistance. In winter they may be fed with bread, carrots, grain of various kinds, &c. They drink but very little, and, after eating, exhibit the appearance of rumination, in the same

* From four to ten or twelve. According to the Count de Buffon, a single pair might produce 1000 in one year, since they produce at least every two months; go with young only three weeks; and have been known to bring forth young when only two months old.

manner as the Hare. They are very tender animals, and susceptible of cold, and should therefore be provided with warm receptacles to retire into in bad weather. If fed too long on very succulent food, as cabbage, sowthistle, &c. they receive injury by it, and should be relieved by allowing them more solid food, as bread, grain, &c. They have often been used as an article of food, and are in some place considered as a delicacy. In their habits they are extremely neat, and may be frequently observed in the act of smoothing and dressing their fur, somewhat in the manner of a Cat. In their quarrels they not only bite but kick each other, like horses, with their hind feet. It is observed, that the male and female seldom sleep at the same time; but seem alternately to watch each other; the one sleeping while the other is feeding, &c. Their general voice is a sort of grunting squeak, and sometimes a shriller or sharper cry.

SPOTTED CAVY.

Cavia Paca. *C. caudata, pedibus pentadactylis, lateribus flavescente-lineatis.* Lin. Syst. Nat. Gmel. p. 120.

Tailed Cavy, with pentadactylous feet, and sides marked by rows of yellowish white spots.

Mus Paca. *M. cauda abbreviata, pedibus pentadactylis, lateribus flavescente-lineatis.* Lin. Syst. Nat. p. 81.

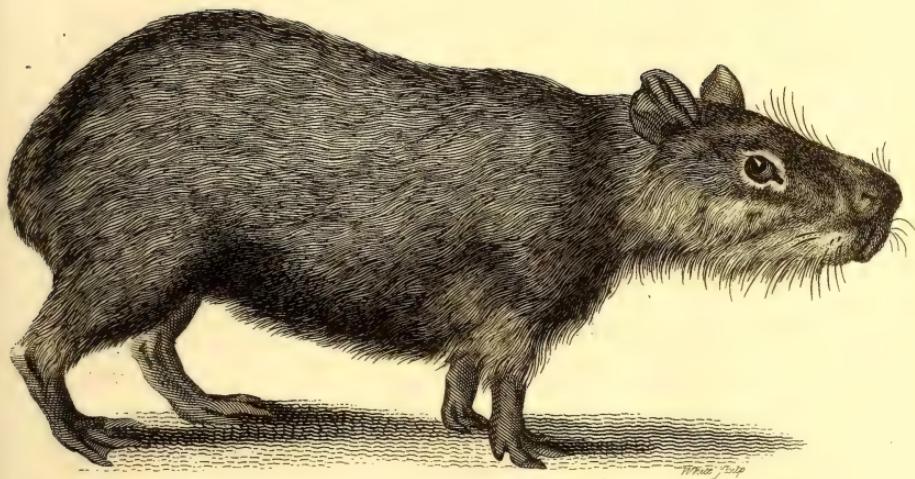
Paca. Buff. 10. p. 269. pl. 34. and Suppl. 3. p. 203. pl. 35.

Spotted Cavy. Pennant Quadr. p. 120.

THIS is a large species, measuring near two feet in length. It is found in Guiana, Brasil, and other parts of South America; inhabiting holes formed under ground, and principally near the banks of rivers. It is of a thick, clumsy form, somewhat resembling that of a pig; for which reason it has been sometimes called the Hog-Rabbit. The head is round; the muzzle short and black; the upper jaw longer than the lower; the lip divided like that of a hare; the nostrils large; the whiskers long; the eyes large and prominent, and of a brown colour; the ears short, moderately large, round, and naked; the neck thick; the body very plump, larger behind than before, and covered with coarse, short, thinly-scattered hair of a dusky colour, deepest on the back: the throat, breast, insides of the limbs, and belly, are of a dingy white; and on each side the body run five rows of roundish, slightly angular spots, situated pretty near each other: the legs are short; and the feet have five toes, four of which are armed with strong and sharp



SPOTTED CAVY



CAPYBARA.

claws; that on the fifth toe being very small: the tail is scarce visible, being a mere small conical projection of scarce half an inch in length. The Spotted Cavy is a nocturnal animal, residing in a solitary manner in his hole during almost the whole day. In a domestic state it readily feeds on almost any kind of vegetable diet, and is particularly fond of sugar and fruits. It is much esteemed as an article of food by the South Americans. It is subject to some variety in point of colour, and has been sometimes seen quite white. Its general length, when full-grown, is about two feet. The female is said to produce but one young at a birth,

CAPHYBARA.

Cavia Capybara. *C. ecaudata, plantis tridactylis palmatis.* Lin.
Syst. Nat. Gmel. p. 123.

Tailless Cavy, with tridactyle palmated hind-feet.

Sus Hydrochæris. *S. plantis tridactylis, cauda nulla.* Lin. *Syst. Nat.* p. 103.

Cabiai. *Buff.* 12. p. 384. pl. 49.

Thick-nosed Tapir. *Pennant Synops.* p. 83.

Capybara. *Pennant Quadr.* 2. p. 88.

THE characters of this animal are somewhat ambiguous, and it was formerly considered by Linnæus as a species of Hog, and was accordingly placed in that genus in the 12th edition of the *Systema Naturæ*, under the name of *Sus Hydrochæris*. Mr. Pennant, in his *Synopsis of Quadrupeds*,

peds, placed it with the *Tapir*, though in his *History of Quadrupeds* he has stationed it among the rest of the Cavies. Dr. Pallas seems to have first ascertained its true situation in systematic arrangement, and has described it by the name of *Cavia Capybara*, the latter word being its Brasilian or native name.

The Capybara grows to the size of a hog of two years old, and is said to have been sometimes found of the weight of 100 pounds. It inhabits various parts of South America, though said to be more common in Brasil than in other regions. It feeds not only on various vegetables, and particularly on sugar canes, but also (contrary to the nature of most of the *Glires*) on fish; for which purpose, it frequents rivers, swimming with the same facility as the Otter, and, like that animal, dragging its prey out of the water, and eating it on the bank. These excursions in quest of prey are made principally during the night. The Capybara is, in general, considered as of a gentle disposition, and is readily tamed and made familiar: the female produces but one young at a birth. These animals are said to go in pairs, and are naturally shy and timid. Their voice resembles the braying of an ass. The Capybara runs but indifferently, on account of the length of its feet, and, therefore, commonly makes its escape by plunging into the water, and swimming to a great distance; and for this reason it is but seldom seen at any great distance from the banks of rivers.

A living specimen, in a half-grown state, was seen by the Count de Buffon, which had been brought into France from America. It was of a gentle disposition, and was fed with bread, milk, fruit, &c. From the number of teats, it should seem, according to that author, to be a very prolific animal: this, however, is contradicted by fact; since it is known to produce but one at a birth.

By some it is considered as a good article of food; but others assure us that it is of a rank and fishy taste: this may depend on the different age of the animal, as well as on the diet to which it has been accustomed.

The Capybara has a very large head, and a thick, divided nose, on each side are strong and large whiskers: the ears are small and rounded: the eyes large and black: the upper jaw longer than the lower: in each jaw are two very large and strong cutting teeth, and the grinders, which are eight in each jaw, are divided into three flat surfaces on the upper part: the neck is very short: the body short and thick, and covered with short, coarse, brown hair: the legs short; the feet long; the foremost being divided into four toes, connected to each other by a small web at the base, and tipped with thick claws, or rather small hoofs, at the extremities: the hind feet are formed in a similar manner, but are divided into three toes only: there is no appearance of a tail. Sometimes this animal, while feeding, sits up, in the manner of a squirrel, holding its

food between its paws. It is said sometimes to get into gardens by night, and commit great ravages among the esculent vegetables. According to Mr. Pennant, this species extends from the *Isthmus of Darien to Paraguay.*

AGUTI.

Cavia caudata, corpore ex rufo fusco, abdomine flavescente. Lin.
Syst. Nat. Gmel. p. 121.

Tailed Cavy, with the body rufous brown, and the abdomen yellowish.

Mus Aguti. *M. cauda abbreviata, palmis tetradactylis, plantis tridactylis, abdomine flavescente.* Lin. Syst. Nat. p. 80.

Aguti vel Acuti Brasiliensibus. Marcgr. bras. p. 224.

Agouti. Buff. 8. p. 375. pl. 50.

Long-nosed Cavy. Pennant Quadr. 2. p. 94.

THIS species is peculiar to the warmer parts of South America, and is extremely common in Guiana. Its general size is that of a rabbet: the body is plump, and thicker behind than before: the head is rather small, and somewhat compressed laterally: the snout long and sharpish; the nose divided at the tip, and the upper jaw longer than the lower: the eyes round and black; the ears very short, broad, naked, and rounded: the neck rather long, but thick: the legs thin, almost naked, and blackish: the hind legs are longer than the fore, and have only three toes: the tail is extremely short, naked, and sometimes scarce visible: the hair on the whole animal is hard, strong, and shining, and is brown with a

cast of orange colour, with blackish freckles, being, in reality, a mixture of red, brown, and black : the rump is orange coloured. This animal's manner of moving resembles that of a hare, and its voice is like the grunting of a young pig. It feeds on various roots, nuts, fruit, &c. &c. and resides in woods, where it forms subterraneous burrows, and sometimes lodges in the hollows of trees.

According to Mons. de la Borde, a correspondent of the Count de Buffon, the Aguti is about the size of a hare : his skin is hard, and lasts very long when made use of as an upper-leather for shoes. His flesh is white, and nearly as good as that of the rabbit, having a similar taste and flavour ; and whether old or young, it is always tender ; but those which inhabit the sea-coasts are superior in this respect. They are taken in traps, or hunted with dogs. The Indians and negroes, who know how to allure them by whistling, or imitating their cries, kill as many as they please. When pursued, they conceal themselves, like rabbits, in the holes of old trees. They hold their food in their paws like squirrels. Their ordinary food, which they often conceal in the earth, to be used occasionally, are the nuts of the Maripa, the Tourlovri, the Corana, &c. and, after concealing these nuts, they often touch them not for six months. They multiply as fast as rabbits, producing three, four, and sometimes five young ones, during every season of the year. They live not in numbers in the same hole, but are either

found alone, or else the mother with her young. They are easily tamed, and will eat almost every thing. When in a domestic state, they remove not to any great distance, and always return to the house spontaneously; but constantly retain somewhat of their wild disposition. In general they remain in their holes during the night, unless the moon shines bright; but run about most of the day. There are some countries, as about the mouth of the Amazons, where these animals are so numerous as to be often met with in scores.

Var.?

LEPORINE CAVY.

Cuniculus caudatus auritus, pilis ex rufso et fusco mixtis rigidis vestitus. Briss. Quadr. 143.

Cuniculus Americanus. Seb. 1. p. 67. pl. 41. f. 2.?

Java Hare. Catesb. Carol. append. pl. 18.

Javan Cavy. Pennant Quadr. 2. p. 95.

THIS is by Mr. Schreber considered as a variety of the Aguti, from which it differs in being of a reddish colour above, with the breast and belly white: the legs are long: the hind part large, and the tail very short. It is of the size of a hare, and is a native of Surinam, and other parts of South America. It is altogether an American animal, and notwithstanding its common title of the Java Hare, is not found either in that island or Sumatra, as erroneously supposed by some.

ACOUCHY.

*Cavia Acuschy. C. caudata, corpore olivaceo. Lin. Syst. Nat.
Gmel. p. 121.*

Tailed Cavy, with olive-coloured body.

*Cuniculus minor caudatus olivaceus, Akouchy. Barr. Fr. equin.
p. 153.*

Acouchy. *Buff. 15. p. 58. and suppl. 3. p. 211. pl. 36.*

Olive Cavy. *Pennant Quadr. 2. p. 95.*

THIS animal, which is by some regarded as a variety of the Aguti, differs in being somewhat smaller, rather thinner, and entirely of an olive colour, paler or more inclining to whitish beneath: the tail is also longer than in the Aguti. It is a native of the same parts of South America with the Aguti, is of similar manners, and is also tamed with equal readiness. We are informed by Mons. de la Borde, that it does not attempt the water like the Aguti, but will rather suffer itself to be taken. Mons. de la Borde also adds, that it produces but one young at a time. Its voice resembles that of the **Cavia Cobaya** or **Guinea-Pig**.

ROCK CAVY.

Cavia Aperea. *C. ecaudata, corpore ex cinereo rufo.* Lin. Syst.

Nat. Gmel. p. 122.

Tailless Cavy, with rufous-ash-coloured body.

Cuniculus (Brasiliensis) Aperea dictus. Marcgr. Raj. Quadr. p. 206.

Cuniculus Indicus femina. Aldr. dig. p. 393.

Rock Cavy. Pennant Quadr. 2. p. 90.

THIS animal (says the Count de Buffon), which is a native of Brasil, is neither a rabbet nor a rat, but seems to partake of both. It is a foot long by seven in circumference. Its general colour is the same with that of our hares, and its belly is white: its upper lip is divided in the same manner, and it has the same large cutting teeth, and whiskers round the mouth and on the sides of the eyes, but its ears are rounded like those of a rat, and so short that they exceed not a finger's breadth in height: the fore legs are not above three inches in length, and the hind legs are a little longer: the fore feet have four toes, covered with a black skin, and armed with small short claws: the hind feet have only three toes, and the middle one is the longest: it has no tail: the head is somewhat longer than that of a hare, and its flesh is like that of a rabbet, which it resembles in its manner of living: it likewise retires into holes: it does not, however, dig the earth

like the rabbit, but conceals itself in the clefts of rocks; and hence it is easily seized in its retreat.

The Rock Cavy is considered as an excellent article of food, and is even superior to the rabbit.

CASTOR. BEAVER.

Generic Character.

<i>Dentes Primores superiores truncati, angulo transverso excavati.</i>	<i>Front-teeth</i> in the upper jaw truncated, and excavated with a transverse angle.
<i>Inferiores apice transversi.</i>	In the lower jaw transverse at the tips.
<i>Molares utrinque quatuor.</i>	<i>Grinders</i> on each side four.
<i>Cauda longa depressa squamosa.</i>	Tail long, depressed and scaly.
<i>Claviculae perfectæ.</i>	<i>Collar-bones</i> in the skeleton.

COMMON BEAVER.

Castor Fiber. *C. cedula ovata plana calva.* Lin. Syst. Nat. Gmel. p. 124.

Chesnut-coloured Beaver, with flat ovate naked tail.

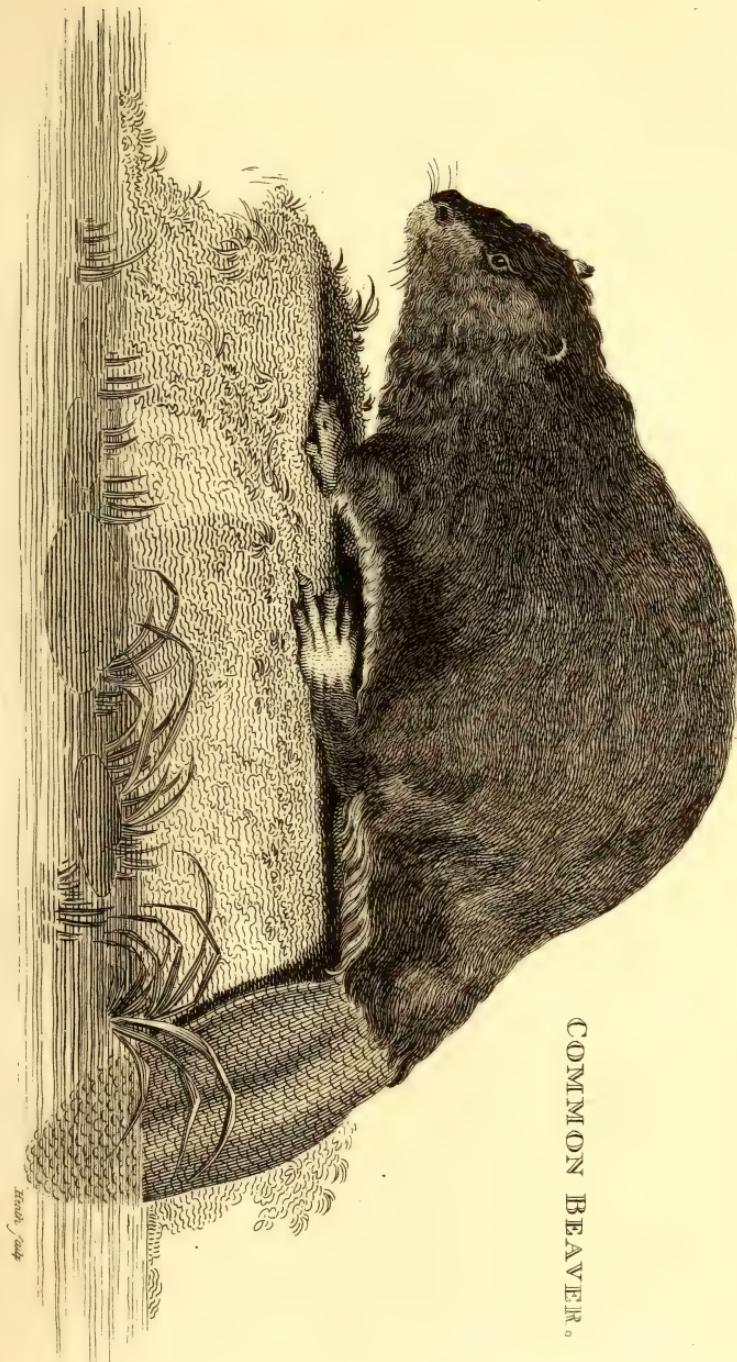
Castor castanei coloris, cauda horizontaliter plana. Briss. Quadr. p. 133.

Castor. Gesn. Quadr. 309. Aldr. dig. 277.

Le Castor. Buff. 8. pl. 36.

Castor Beaver. Pennant Quadr. 2. p. 114.

THE Beaver is a native of the most northern parts of Europe and Asia, but is found most plentifully in North America. It is readily distinguished from every other quadruped by the remarkable structure of its tail, which is of an oval form, nearly flat, but rising into a slight convexity on its upper surface, perfectly void of hair,



COMMON BEAVER.

except at the base, and marked out into scaly divisions like the skin of a fish. The general length of the Beaver is about three feet, and of the tail nearly one foot. The colour of the animal is a deep chesnut, and the hair is very fine, smooth, and glossy. The Beaver, like other quadrupeds, sometimes varies in colour, and is occasionally found perfectly black. Instances have also occurred in which it has been found entire white, cream coloured, or spotted (as in some specimens of the Leverian Museum).

Of all quadrupeds the Beaver is considered as possessing the greatest degree of natural or instinctive sagacity in constructing its habitation; preparing, in concert with others of its own species, a kind of arched caverns or domes, supported by a foundation of strong pillars, and lined or plastered internally with a degree of neatness and accuracy unequalled by the art of any other quadruped. It does not appear that this extraordinary sagacity of the Beaver was known to the ancients, though they were well acquainted with the animal, which they killed chiefly for the sake of the medical drug *castoreum* or *castor*. It should seem, however, that the architecture of the Beaver is no where so conspicuous as in the northern parts of America, and that those of Europe do not in general exhibit equal talents in preparing their mansions.

The favourite resorts of the Beaver are retired, watery, and woody situations. In such places the animals assemble, to the number of some

hundreds ; living in a kind of families, and building their arched mansions or receptacles. The general method of preparing which is detailed in a very pleasing manner by the Count de Buffon, who seems to have collected the best and fullest information on the subject.

" The Beavers (says this author) begin to assemble in the month of June or July, for the purpose of uniting into society. They arrive in numbers from all parts, and soon form a troop of two or three hundred. The place of rendezvous is generally the situation fixed for their establishment, and always on the banks of some water. If the waters be flat, and never rise above their ordinary level, as in lakes, the Beavers make no bank or dam ; but in rivers or brooks, where the waters are subject to risings and fallings, they construct a bank, and by this artifice form a pond or piece of water, which remains always at the same height. The bank traverses the river, from one side to the other, like a sluice, and it is often from eighty to a hundred feet long, by ten or twelve broad at the base. This pile, for animals of so small a size, appears to be enormous, and supposes an incredible labour ; but the solidity with which the work is constructed is still more astonishing than its magnitude. The part of the river where they erect this bank is generally shallow. If they find on the margin a large tree, which can be made to fall into the water, they begin with cutting it down, to form the principal part of their work. This tree is often thicker

than the body of a man. By gnawing the foot of the tree with their four cutting teeth they accomplish their purpose in a very short time, and always make the tree fall across the river. They next cut the branches from the trunk, to make it lie level. These operations are performed by the whole community. Several Beavers are employed in gnawing the foot of the tree, and others in lopping off the branches after it has fallen. Others, at the same time, traverse the banks of the river, and cut down smaller trees, from the size of a man's leg to that of his thigh. These they dress and cut to a certain length, to make stakes of them, and first drag them by land to the margin of the river, and then by water to the place where the building is carrying on. These piles they sink down, and interweave the branches with the larger stakes. This operation implies the vanquishing of many difficulties ; for to dress these stakes, and to put them in a situation nearly perpendicular, some of the Beavers must elevate with their teeth the thick ends against the margin of the river, or against the cross-tree, while others plunge to the bottom, and dig holes with their fore feet to receive the points that they may stand on end. Whilst some are labouring in this manner, others bring earth, which they plash with their fore feet, and transport it in such quantities, that they fill with it all the intervals between the piles. These piles consist of several rows of stakes, of equal height, all placed opposite to each other, and extend from

one bank of the river to the other. The stakes facing the under part of the river are placed perpendicularly; but the rest of the work slopes upwards to sustain the pressure of the fluid, so that the bank, which is ten or twelve feet wide at the base, is reduced to two or three at the top. It has, therefore, not only the necessary thickness and solidity, but the most advantageous form for supporting the weight of the water, for preventing its issue, and for repelling its efforts. Near the top or thinnest part of the bank they make two or three sloping holes, to allow the surface-water to escape, and these they enlarge or contract, according as the river rises or falls; and when any breaches are made in the bank by sudden or violent inundations, they know how to repair them as soon as the water subsides.

"It would be superfluous, after this account of their public work, to give a detail of their particular operations, were it not necessary, in a history of these animals, to mention every fact, and were not the first great structure made with a view to render their smaller habitations more commodious. These cabins or houses are built upon piles near the margin of the pond, and have two openings, the one for going to the land, and the other for throwing themselves into the water. The form of the edifices is either oval or round, some of them larger, and some less, varying from four or five, to eight or ten feet diameter. Some of them consist of three or four stories, and their walls are about two feet thick, raised perpendicu-

larly upon planks, or plain stakes, which serve both for foundations and floors to their houses. When they consist of but one story, the walls rise perpendicularly only a few feet, afterwards assume a curved form, and terminate in a dome or vault, which serves them for a roof. They are built with amazing solidity, and neatly plastered both without and within. They are impenetrable to rain, and resist the most impetuous winds. The partitions are covered with a kind of stucco, as nicely plastered as if it had been executed by the hand of man. In the application of this mortar their tails serve for trowels, and their feet for plastering. They employ different materials, as wood, stone, and a kind of sandy earth, which is not subject to dissolution in water. The wood they use is almost all of the light and tender kinds, as alder, poplar, and willow, which grow generally on the banks of rivers, and are more easily barked, cut, and transported, than the heavier and more solid species of timber. When they once attack a tree, they never abandon it till they cut it down, and carry it off. They always begin the operation of cutting at a foot or a foot and half above the ground. They labour in a sitting posture ; and besides the convenience of this situation, they enjoy the pleasure of gnawing perpetually the bark and wood, which are most agreeable to their taste ; for they prefer fresh bark and tender wood, to most of their ordinary aliment. Of these provisions they lay up ample stores, to support them during the winter ;

but they are not fond of dry wood, and make occasional excursions during the winter season for fresh provisions in the forests. It is in the water, or near their habitations, that they establish their magazines. Each cabin has its own magazine, proportioned to the number of its inhabitants, who have all a common right to the store, and never pillage their neighbours. Some villages are composed of twenty or twenty-five cabins, but such establishments are rare ; and the common republic seldom exceeds ten or twelve families, each of which has its own quarter of the village, its own magazine, and its separate habitation. They allow not strangers to settle in their neighbourhood. The smallest cabins contain two, four, or six ; and the largest, eighteen, twenty, and, it is alleged, sometimes thirty, Beavers. They are almost always equally paired, there being the same number of females as of males. Thus, upon a moderate computation, the society is often composed of 150 or 200, which all, at first, laboured jointly, in raising the great public building, and afterwards in select tribes or companies, in making particular habitations. In this society, however numerous, an universal peace is maintained. Their union is cemented by common labours ; and it is rendered perpetual by mutual convenience, and the abundance of provisions which they amass and consume together. Moderate appetites, a simple taste, an aversion against blood and carnage, deprive them of the idea of rapine and war. They enjoy every pos-

sible good, while man only knows how to pant after it. Friends to each other, if they have some foreign enemies, they know how to avoid them. When danger approaches, they advertise one another by striking their tail on the surface of the water, the noise of which is heard at a great distance, and resounds through all the vaults of their habitations. Each takes his part; some plunge into the lake, others conceal themselves within their walls, which can only be penetrated by the fire of Heaven or the steel of man, and which no animal will attempt either to open or overturn. These retreats are not only very safe, but neat and commodious. The floors are spread over with verdure: the branches of the box and the fir serve them for carpets, upon which they permit not the least dirtiness. The window that faces the water answers for a balcony to receive the fresh air, and to bathe. During the greatest part of the day they sit on end, with their head and anterior parts of the body elevated, and their posterior parts immersed in the water. This window is made with caution, the aperture being sufficiently raised to prevent its being stopped up with the ice, which, in the climates inhabited by the Beaver, is often two or three feet thick. When this happens, they slope the window, cut obliquely the stakes which support it, and thus open a communication with the unfrozen water. This element is so necessary, or rather so agreeable, to them, that they can seldom dispense with it. They often swim a long way under the ice;

and it is then that they are most easily taken, by attacking the cabin on one hand, and at the same time watching at a hole made at some distance, where they are obliged to repair for the purpose of respiration. The continual habit of keeping their tail and posterior part in the water, appears to have changed the nature of their flesh. That of their anterior parts, as far as the reins, has the taste and consistence of the flesh of land or air animals ; but that of the tail and hinder parts, has the odour and all other qualities of fish. The tail, which is a foot long, an inch thick, and five or six inches broad, is even an extremity or genuine proportion of a fish attached to the body of a quadruped ; it is entirely covered with scales, and with a skin perfectly similar to those of large fishes ; they may be scraped off with a knife, and after falling, they leave an impression on the skin, as in the case with all fishes.

“ It is in the beginning of summer that the Beavers assemble. They employ the months of July and August in the construction of their bank and cabins. They collect in September their provisions of bark and wood ; after which they enjoy the fruits of their labours, and taste the sweets of domestic happiness : knowing and loving one another from habit, from the pleasures and fatigues of a common labour, each couple join not by chance, nor by the pressing necessities of nature, but unite from choice and from taste. They pass together the autumn and the winter. Perfectly satisfied with each other, they never

separate. At ease in their cabins, they go not out but upon agreeable or useful excursions, to bring in supplies of fresh bark, which they prefer to what is too dry or too much moistened with water. The females are said to go pregnant for four months: they bring forth at the end of winter, and generally produce two or three young. About this time they are left by the males, who retire to the country to enjoy the pleasures and the fruits of the spring. They return occasionally to their cabins, but dwell there no more. The mothers continue in the cabins, and are occupied in nursing, protecting, and rearing their young, which at the end of a few weeks are in a condition to follow their dams. The females, in their turn, make their excursions, to recruit themselves by the air, by eating fishes*, crabs, and fresh bark, and in this manner pass the summer upon the waters and in the woods. They assemble not again till autumn, unless their banks or cabins be overturned by inundations; for when accidents of this kind happen, they suddenly collect their forces, in order to repair the breaches which have been made."

Besides the associated Beavers there are others that live solitary, and instead of constructing cabins, or vaulted and plastered receptacles, con-

* This is a particular which seems to want confirmation, and it is now generally believed that the Beaver does not feed on fish, but merely on vegetable substances; yet Kalm assures us that he has seen tame Beavers which have been made use of for catching fish.

tent themselves with forming holes in the banks of rivers. The fur of these, which are commonly termed terrier beavers, is considered as far less valuable than that of the associated animals.

The Beaver, when taken young, may readily be tamed, and in that state appears to be an animal of a gentle disposition, but does not exhibit any symptoms of superior sagacity.

In Europe the favourite food of the Beaver is the bark of the poplar, the aspin, the birch, and other soft woods. In America, the *Magnolia glauca* and the *Fraxinus Americana* are said to be particularly selected. It also feeds on various roots, and especially on those of the *Acorus Calamus*, or *Calamus aromaticus*.

Beavers are said to make their principal excursions by night, and to sit by day near the mouths of their dwellings on sedges, &c. with their tails immersed in the water. They abound, according to Mr. Pennant, in the Asiatic part of the Russian empire; and are found in companies, or associated, about the Konda, and other rivers which flow into the Oby. They occur in a dispersed or *terrier* state in the wooded parts of independent Tartary, and in the chains of mountains which border on Siberia.

CHILI BEAVER.

Castor Huidobrius. *C. cauda longa compresso-lanceolata, palmis lobatis, plantis palmatis.* Molina. *Hist. Chil.* p. 253.

Beaver with long compresso-lanceolate hairy tail, lobated fore-feet, and palmated hind-feet.

Guillino Beaver. *Pennant Quadr.* 2. p. 120.

THIS is a species peculiar to South America, and appears to have been first described by Molina in his natural history of Chili. He informs us that it is found in the very deep lakes and rivers of that country, and feeds principally on fish and crabs. Its length from nose to tail is about three feet; the head is of a squarish form; the eyes small; the ears rounded and short, and the snout obtuse: in each jaw are two sharp and strong cutting teeth, and the grinders are like those of the Common Beaver. The body is very broad, and covered, like the Common Beaver, with two sorts of hair; the shortest or softest of which is superior to that of most other quadrupeds, and is in high esteem with the manufacturers, being wrought into a kind of cloth, which has the softness of velvet; and is also used in the manufacture of hats. The colour of this animal is grey above, and whitish beneath; the toes of the fore feet are lobated, or bordered with a membrane, and the hind feet are webbed: the toes are five in number on all the feet. The tail is of a compressed lanceolate form and hairy. It is a bold and even fierce animal, and has the power of con-

tinuing a great while under water. It does not construct any regular habitation like the Common Beaver, nor does it afford any castor. The female is said to produce from two to three young at a birth. It is called in Chili by the name of *Guillino*.

MUS. RAT.

Generic Character.

<i>Dentes Primores superiores cuneati.</i>	<i>Upper Front-teeth wedge-shaped.</i>
<i>Molares utrinque tres, radius duo.</i>	<i>Grinders on each side three, sometimes only two.</i>
<i>Claviculae perfectæ.</i>	<i>Clavicles, or collar-bones in the skeleton.</i>

THIS numerous tribe constitutes a formidable phalanx against which mankind finds it necessary to employ the various artifices of extirpation, in order to lessen the ravages occasionally suffered by its depredations. In our own island the black and the brown rats, the field and domestic mice are the principal destroyers; but in other parts of Europe, as well as in the hotter regions of Asia, Africa, and America, many other species still more noxious and formidable are found. The different kinds vary considerably in their manner of life, some confining themselves entirely to vegetable food, while others are polyphagous, destroying with indiscriminate avidity almost any animal or vegetable substance to which they can gain access. Their pace is, in general, rather quick, and their most usual residence is in obscure subterraneous retreats, from

which they principally emerge by night. They are of a prolific nature, and the females are furnished with numerous teats. Some species are migratory; others local or attached to the same residence. Lastly, some are of an uncouth form and disagreeable appearance, while others are remarkable for the elegance of their aspect and colours. In the 12th edition of the *Systema Naturæ*, Linnæus included in this genus the Jerboas, the Cavys, and several other animals which are now formed into distinct genera. This mode of distribution might perhaps be carried still farther; the habit or appearance of some species differing very considerably from that of the major part of the tribe.

With flattened Tails.

MUSK RAT.

Mus Zibethicus. M. cauda longa compresso-lanceolata, pedibus fissis. Lin. Syst. Nat. Gmel. p. 125.

Ferruginous-brown Rat, with long compressed-lanceolate tail, and unwebbed feet.

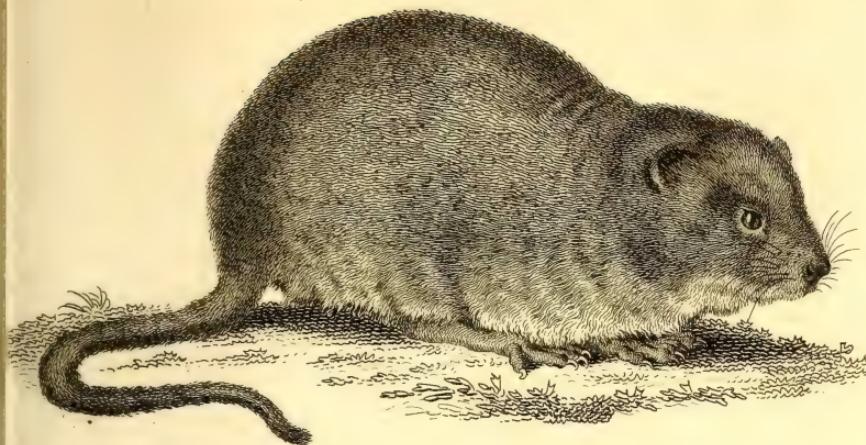
Rat musqué. *Sarrasin act. Paris, 1725. p. 323. t. 11. f. 1, 2.*

Castor zibethicus. Lin. Syst. Nat. ed. 12. p. 79.

Ondatra. *Buff. 10. p. 1. pl. 1.*

Musk Beaver. *Pennant Quadr. 2. p. 119.*

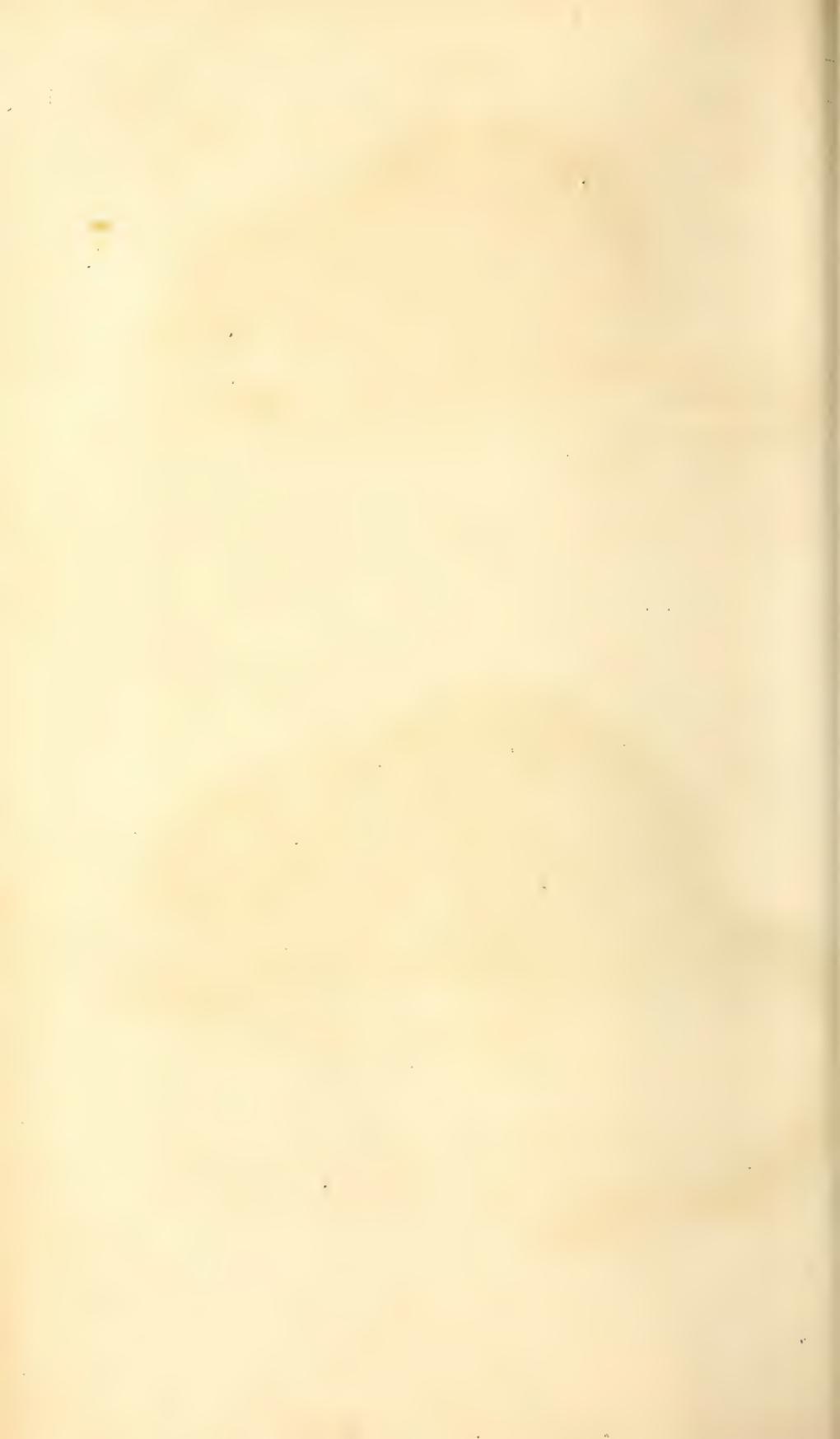
IN the Memoirs of the French Academy of Sciences for the year 1725 there is a complete and excellent description of this animal by Mons.



WATER RAT.



MUSK RAT.



Sarrazin *, at that time king's Physician at Quebec. It is from the above description that the Count de Buffon has drawn up the major part of his own account, and indeed it does not appear possible to add any thing material to what Mons. Sarrazin has delivered. This animal is of the size of a small rabbet, and is extremely common in Canada. Its head is short, like that of a water-rat; the eyes large; the ears very short, rounded, and covered internally as well as externally with hair. It has, like the rest of this tribe, four very strong cutting teeth, of which those in the lower jaw are near an inch long; those in the upper somewhat shorter: the fur on the whole body is soft and glossy, and beneath is a fine fur, or thick down, as in the Beaver: the toes on all the feet are simple, or without membranes, and are covered with hair: the tail is nearly as long as the body, and is of the same form with that of the *Sorex moschatus* or Musk Shrew, being laterally compressed; it is nearly naked, and covered with small scales intermixed with scattered hairs. The general colour of the animal is a reddish brown; of the tail ash colour. In its general appearance this animal greatly resembles the Beaver, except in size, and in the form of its tail. It has also similar instincts and dispositions; living in a social state in the winter, in curiously-constructed huts or ca-

* Sarrazin was also an excellent botanist, and the remarkable genus *Sarracenia* was instituted in honour of him by Tournefort, to whom he had sent specimens from Canada.

bins, built near the edge of some lake or river. These huts are about two feet and a half or three feet in diameter, plastered with great neatness in the inside, and covered externally with a kind of basket-work, of rushes, &c. interlaced together so as to form a compact and secure guard, impermeable by water. During the winter these receptacles are generally covered by several feet of snow, and the animals reside in them without being incommoded by it, several families commonly inhabiting each cabin. It is added that the insides of the receptacles are furnished with a series of steps, to prevent them from being injured by inundations. These animals do not lay up a stock of provisions like the Beaver, but form subterraneous passages beneath and round their cabins, to give themselves an opportunity of procuring occasional supplies of roots, herbage, &c. According to Mons. Sarrazin the animal is particularly calculated by Nature for its subterraneous habits ; having a great muscular force in its skin, which enables it to contract its body occasionally into a small volume : it has also a great suppleness in the false ribs, which easily admit of contraction, so that it is enabled to pass through holes impervious to much smaller animals than itself.

During the summer these creatures wander about in pairs, feeding voraciously on herbs and roots. Their odour, which resembles that of musk, is so strong as to be perceived at a considerable distance ; and the skin, when taken from the body, still retains the scent : this musky odour

is owing to a whitish fluid deposited in certain glands situated near the origin of the tail. It has been supposed that the *Calamus aromaticus*, or sweet flag (*Acorus Calamus*. Lin.), which these animals select as a favourite food, may contribute to their fragrant smell. They walk and run in an awkward manner, like the Beaver, and they cannot swim so readily as that animal, their feet being unfurnished with webs. Their voice is said to resemble a groan. The females produce their young towards the beginning of summer, and have five or six at a time; and these, if taken early, are easily tamed, and become very sportive; and it is remarkable that the tail, which in the full-grown animal is as long as the body, is at that period very short.

The fur of this species is greatly esteemed as a commercial article, resembling that of the Beaver. Linnæus in the twelfth edition of the *Systema Naturæ* ranked the animal under the genus *Castor*; and Mr. Pennant has followed his example. Mr. Schreber, however, considers it as belonging in strict propriety to the present genus.

COYPU RAT.

Mus Coypus. *M. cauda mediocri subcompressa pilosa, plantis palmatis.* Lin. Syst. Nat. Gmel. p. 125.

Brown Rat, with slightly compressed hairy tail of middling length, and webbed hind feet.

Mus Coypus. Molina Hist. Chil. p. 255.

Coypu Rat. Pennant Quadr. 2. p. 177.

THE first describer of this animal was Molina, who informs us that it is an inhabitant of the waters of Chili; that it has the general appearance of an Otter, being of the same size and colour; but that in its teeth it agrees with the rat tribe: the feet are each furnished with five toes; those of the hind feet being connected by a web: the ears are rounded, the nose longish and covered with whiskers, and the tail thick and flattish on the sides. This animal lives occasionally on land as well as water; sometimes frequenting houses, and is easily tamed. The female produces five or six young at a birth.

With round naked Tails.

Mus Pilorides. *M. cauda longiuscula squamata truncato-obtusa,*
corpore albido. Lin. Syst. Nat. Gmel. p. 126.

Whitish Rat, with longish, scaly, obtusely-truncated tail.

♂. Castor cauda linearis tereti. Brown Jam. p. 484. ?

Piloris. Buff. 10. p. 2.

THIS species is found in India and the Indian islands, and in size nearly equals the Guinea-Pig. Its colour is whitish, with a cast of grey-ferruginous on the back, and of cinereous on the abdomen: the tail is longish, nearly naked, scaly, and obtuse at the extremity. A variety of this animal is found in the American islands, which seems to differ from the above in being of a darker colour on the back, and in having a much shorter tail. Perhaps it may be a distinct species, but the history of both seems at present not sufficiently clear to enable us to determine this point.

CARACO RAT.

Mus Caraco. *M. cauda longa squamosa obtusiuscula, corpore griseo, plantis subsemipalmatis.* Lin. Syst. Nat. Gmel. p. 126.

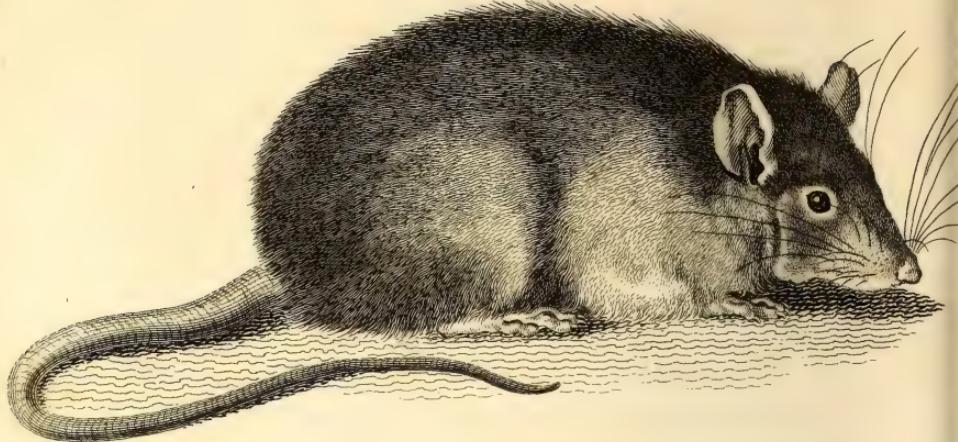
Grey Rat, with long, scaly, somewhat obtuse tail, and slightly semipalmated hind feet.

Mus Caraco. Pall. glir. p. 91. n. 39. p. 335. t. 23.

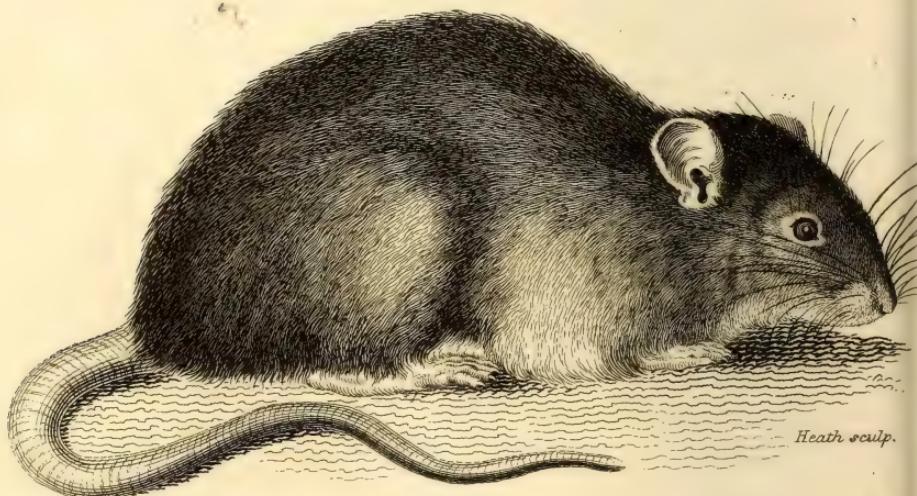
American Rat. Pennant. Quadr. 2. p. 180.

THE Caraco, first described by Dr. Pallas, so extremely resembles the brown or Norway rat, that at first sight it might be mistaken for that animal; but on an accurate survey, it will be found that the head is rather longer and sharper in proportion; the upper jaw much longer than the lower, and the lip very much divided: the teeth are not so strong as in the Norway rat, and the tail is considerably shorter. This species abounds in the eastern parts of Siberia, frequenting the banks of rivers, and swimming very readily, so that it may be considered as in a manner amphibious. Dr. Pallas supposes this species to have migrated from the southern parts of China. The length of the Caraco is six inches, and of the tail four and a half or rather more. Its colour is similar to that of the brown or Norway rat.

Mr. Pennant supposes his *American Rat* to be the same species with the Caraco. It inhabits North America, and in size, colour, &c. seems to agree with it. Mr. Pennant describes it from a specimen in the Leverian Museum.



BLACK RAT.



NORWAY RAT.

NORWAY RAT.

Mus Decumanus. *M. cauda longissima squamata, corpore setoso griseo subtus albido.* Lin. Syst. Nat. Gmel. p. 127.

Grey stiff-haired Rat, with very long scaly tail, and body whitish beneath.

Surmulot. Buff. 8. p. 206. pl. 27.

Brown Rat. Pennant Quadr. 2. p. 178.

Norway Rat. Brit. Zool. p. 102.

THIS domestic species, which is now become the common rat of our own island, and is popularly known by the name of the Norway Rat, is supposed to be a native of India and Persia, from which countries it has been imported into Europe. In England it seems to have made a national conquest over the black rat, which is now become rare in comparison. The brown rat is larger than the black rat, measuring nine inches from the nose to the tail, which is of the same length, and marked into about two hundred rings or circular spaces : the colour of the animal is a pale tawny grey, whitish beneath : the fore feet have four toes, with a claw in place of a fifth. It is a bold and voracious animal, and commits great havoc in granaries, &c. Sometimes it takes up its residence in the banks of waters, and swims occasionally with almost as much facility as the water rat, or *Mus amphibius*. In its general manner of life it agrees with the black rat; and not only devours grain and fruits, but preys on poultry, rabbits, and various other animals. It is a very prolific species, and produces from ten

to twelve or fourteen, or even sometimes eighteen, young at a time *. When closely pursued it will sometimes turn upon its adversary, and bite with great severity. It seems to have made its first appearance in England about seventy years ago, and is still much less frequent in France and some other parts of the continent than the black rat. In France, according to Buffon, it was first observed at Chantilly, Marly-la-Ville, and Versailles, where it committed great ravages. This author affirms that it breeds three times a year.

BLACK RAT.

Mus Rattus. *M. cauda longissima squamosa, corpore atro subitus canescente.* Lin. Syst. Nat. Gmel. p. 127.

Blackish Rat, ash-coloured beneath, with very long scaly tail.

Mus domesticus major. Gesn. Quadr. p. 731. Aldr. dig.
p. 415.

Rat. Buff. 8. p. 278. pl. 36.

Black Rat. Pennant Quadr. 2. p. 176.

THIS species, like the former, though now so common in most parts of Europe, is supposed to have been originally introduced from India and Persia. Its general length, from nose to tail, is seven inches, and of the tail eight inches : the colour of the head and whole upper part of the body is a dark iron or blackish grey : the belly is of a dull ash-colour : the legs are dusky, and

* Pennant Brit. Zool.

very slightly covered with hair: the fore feet, as in the brown rat, have only four toes, with a small claw in place of a fifth: the tail is nearly naked, coated with a scaly skin, and marked into numerous divisions or rings. Like the former species this animal breeds frequently, and commonly brings about six or seven young at a time. Sometimes they increase so fast as to overstock the place of their abode, in which case they fight and devour each other. It is said that this is the reason why these animals, after being extremely troublesome, sometimes disappear suddenly. Various are the methods made use of for the expulsion of rats from the places they frequent; among which none is more singular than that mentioned by Gesner, who tells us he had been informed that if a rat be caught and a bell tied round its neck, and then set at liberty, it will drive away the rest wherever it goes. This expedient appears to be occasionally practised in modern times with success*. Its

* A gentleman travelling through Mecklenburgh about thirty years ago, was witness to the following curious circumstance in the post-house in New Stargard. After dinner the landlord placed on the floor a large dish of soup, and gave a loud whistle. Immediately there came into the room a Mastiff, a fine Angora Cat, an old Raven, and a remarkably large Rat, with a bell about its neck. The four animals went to the dish, and without disturbing each other, fed together; after which the Dog, Cat, and Rat, lay before the fire, while the raven hopped about the room. The landlord, after accounting for the familiarity which existed among the animals, informed his guest that the Rat was the most useful of the four, for the noise he made had completely freed the house from the rats and mice with which it was before infested.

greatest natural enemy is the weasel, which pursues it into all its recesses, and destroys it. A very small variety of this species, not much larger than a mouse, is said by Dr. Pallas to be found about the deserts in the lower parts of the Volga. Like many other quadrupeds, the rat is sometimes seen perfectly white, in which case it has red eyes. The white rat, however, as we are assured by Mr. Schreber, does not always produce young ones of a similar colour; so that such varieties can hardly be considered as permanent. This is proved from an observation of Professor Herman, who having kept a pregnant white rat for some time, found that the young ones were of the usual colour of their species.

The Rat is supposed to be a native of North America, as well as of Europe, but it is said that South America was entirely free from it, till it was imported there in ships from Europe, in the year 1554.

BANDICOTE RAT.

Mus Malabaricus. *M. griseus, auriculis rotundatis nudis, digitis plantarum exterioribus brevioribus.*

Grey Rat, with naked rounded ears, and the two exterior toes of the hind feet shorter than the rest.

THIS is a very large species, being at least equal, if not superior, to a rabbet in size. In its shape and general appearance it seems most to resemble the Norway rat. Its colour is a pale

cinereous brown ; the ears thin, nearly bare, and rounded ; the snout rather long ; the fore feet shaped like those of the Norway rat, with four toes, and a claw in place of a fifth : the hind feet have five toes, of which the two exterior are considerably shorter than the rest : the tail is above eleven inches in length. This species is said to be very common about the coasts of the Malabar country. At Pondicherry it is frequent, infesting houses like the brown rat. Its voice is said to resemble the grunting of a pig.

PERCHAL RAT.

Mus Perchal. *M. fusco-ferrugineus, subtus cinereus, pedibus posterioribus majoribus.*

Ferruginous brown Rat, with the hind legs larger than the fore.

Le Rat Perchal. *Buff. suppl. 7. p. 276. pl. 69.*

This species is a native of India, and in its general appearance resembles the Norway rat, but is of a longer shape, with a thicker and shorter tail in proportion. It is of a deep subferruginous brown above, and of a greyish cast beneath : the hind legs are larger than the fore : the ears naked and rounded, and the nose rather blunt. This Rat is said to be very numerous about Pondicherry, infesting houses in the same manner as the rats of Europe. It seems to have been first described by Mons. Sonnerat, and is evidently allied to the Bandicote rat. Both species are said to be occasionally eaten by the natives.

COMMON MOUSE.

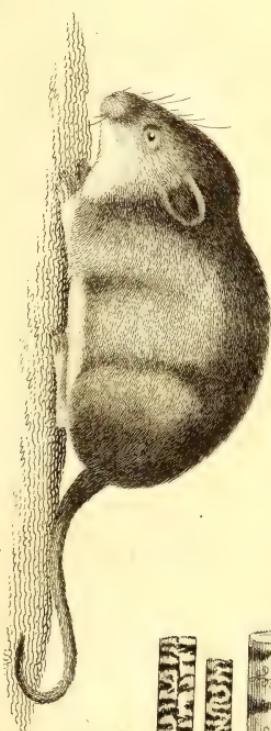
Mus Musculus. *M. cauda elongata subnuda, palmis tetradactylis, plantis pentadactylis, pollice mutico.* Lin. Syst. Nat. p. 81.
 Brown Mouse, ash-coloured beneath, with tetradactylous fore-feet, pentadactylous hind-feet, and long nearly naked tail.
Souris. Buff. 7. p. 309. pl. 39. and Suppl. 3. p. 181. pl. 36.
Common Mouse. Pennant Quadr. 2. p. 184.

THE manners and appearance of this little animal are so universally known, that it seems almost unnecessary to particularise it by a formal description. It is a general inhabitant of almost every part of the old continent, but it is doubtful whether it be originally a native of America, though now sufficiently common in many parts of the new world, as well as in many of its scattered islands.

The Mouse, though wild and extremely timid, is not of a ferocious disposition, but may be easily tamed, and soon after it has been taken, will begin to feed without fear, in the immediate presence of its captors. The white variety is frequently kept in a tame state, and receives an additional beauty from the bright red colour of its eyes; a particularity which generally accompanies the white varieties, not only of this tribe, but of many other quadrupeds.

The Mouse is a prolific animal: the experiment of Aristotle is well known, and often quoted. He placed a pregnant mouse in a vessel of grain, and after a short space, found in it no less than

MINUTE MOUSE.



Hairs of Mice
by the Microscope.



COMMON MOUSE. white var.



COMMON MOUSE.

White var.

the number of 120, all which, he concluded, were the descendants of the mouse he had inclosed.

The fur of the Mouse is remarkably soft and elegant, and the structure of the hair in this animal, as well as in the rat, and probably of many others of this genus, is singularly curious; each hair, when microscopically examined, appearing internally divided into a kind of transverse partitions, as if by the continuation of a spiral fibre; a structure very different from that of the hair of most other animals, and of which the particular nature seems not very distinctly understood.

Derham, in his Physico-Theology, conceives that this mechanism of a spiral fibre may serve for the “gentle evacuation of some humour out of the body,” and adds, that “perhaps the hair serves as well for the insensible perspiration of hairy animals as to fence against cold and wet.” Whatever be the real nature or use of the above structure, its appearance cannot fail to excite astonishment in those who take the pains of examining it with a good microscope. In the annexed plate are introduced some figures of the hairs of a Mouse, highly magnified, in order to give a clear idea of this curious appearance.

In Aldrovandus, who relates the circumstance from Gesner, we meet with a direction for changing, as it were, a mouse into a cat, by making it the incessant persecutor and enemy of the rest of its species. This is to be effected by placing several mice together in a vessel, without food; when, after a certain space, they will be so stimu-

lated by hunger as to destroy each other: the surviving animal being then liberated, will, according to this author, become the most destructive enemy of his own tribe, and will kill every one he meets. Another singular and most cruel experiment is quoted by Aldrovandus from Mizaldus, who tells us, that if two or three mice are shut up in an earthen pot, and placed over a fire, the shrill cries which they utter will attract the mice in the other parts of the house, and cause them to precipitate themselves into the fire. Whatever truth there may be in this experiment, it is certain that, on the shrill cry of distress uttered by one of these animals kept with several others in a cage, the rest will frequently attack and destroy it.

WOOD MOUSE.

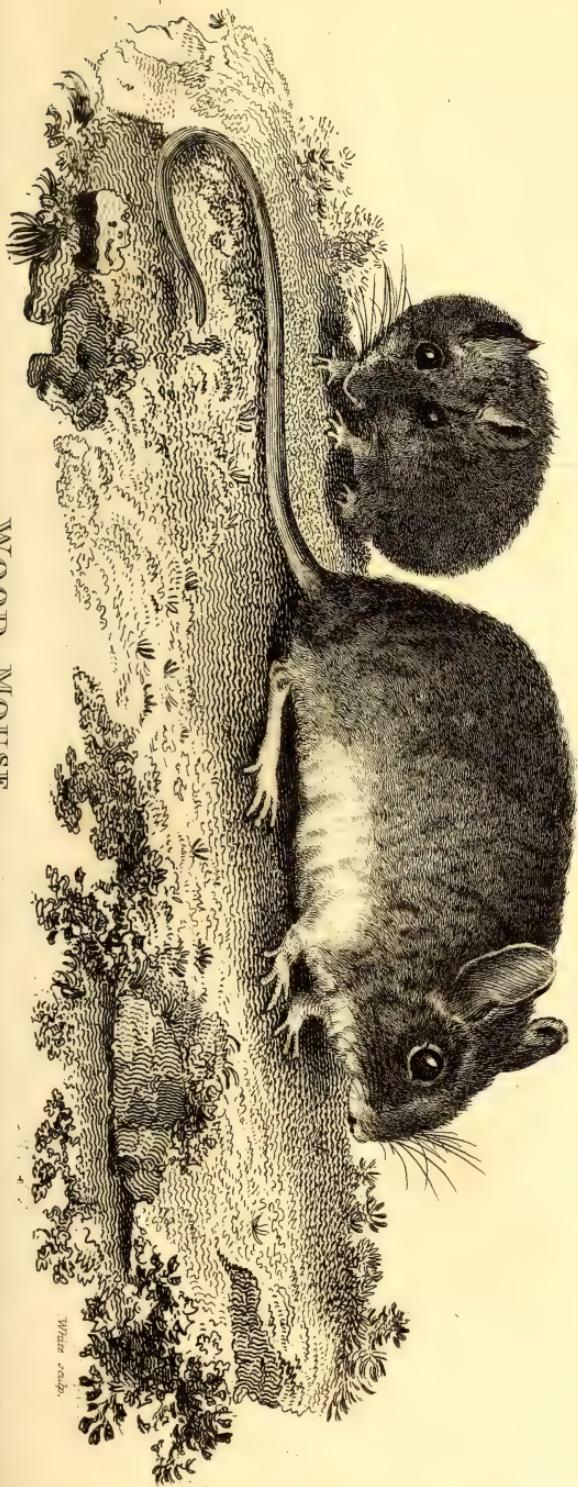
Mus Sylvaticus. *M. cauda longa squamosa, corpore griseo-lutescente subtus lateribusque abrupte albo.* Lin. Syst. Nat. Gmel. p. 129.

Yellowish-brown Mouse, with long naked tail, and body white beneath, the colours being abruptly separated on the sides.

Field Rat. Pennant Quadr. 2. p. 184.
Brit. Zool. 1. p. 105.

Mulot. Buff. 7. p. 325. pl. 41.

THIS animal chiefly frequents dry and elevated grounds, and is found in woods and fields in great plenty. It appears to be common in all the temperate parts of Europe, and even in Russia. It sometimes varies in size, individuals being occa-



WOOD MOUSE.



sionally met with which exceed the rest in magnitude, though differing in no other respect. Its general length is about four inches and a half from nose to tail, and the tail, which is slightly covered with hair, measures four inches. The colour of the animal is a yellowish brown above and whitish beneath; the colours being pretty distinctly marked or separated: the eyes are full and black, and the snout rather blunt. These animals retire into holes among brushwood, and under the trunks of trees, where they amass great quantities of acorns, nuts, and beech-mast. According to Buffon, a whole bushel has sometimes been found in a single hole. These holes are about a foot or more under ground, and are often divided into two apartments, the one for living in along with their young, the other for a magazine of provisions. Considerable damage is often done to plantations by these animals, which carry off new-sown acorns, &c. The Count de Buffon affirms, that in France more mischief is done by these creatures than by all the birds and other animals put together; and adds, that the only way to prevent this is by laying traps, at ten paces asunder, through the whole extent of the sown ground. No other apparatus, he says, is necessary than a roasted walnut, placed under a stone supported by a stick: the animals come to eat the walnut, which they prefer to acorns, and as the walnut is fixed to the stick, whenever they touch it the stone falls and kills them. The same expedient may be as successfully used for the

destruction of the short-tailed field mouse, which likewise commits great havoc in fields and plantations. When the Count de Buffon first practised this experiment, he desired that all the field mice thus taken in traps might be brought to him, and found with astonishment, that above 100 were taken each day from a piece of ground consisting only of about forty French arpents. From the 15th of November to the 8th of December above two thousand were destroyed in this manner. When the frost becomes severe, they retire into their holes, and feed on the stores they have collected. They abound, like many other animals of this genus, chiefly in autumn, and are far less common in the spring; for if provisions happen to fail them in the winter, it is thought that they destroy each other; a circumstance which is known occasionally to take place in many other species.

The long-tailed field mouse is a very prolific animal, breeding more than once a year, and often producing litters of ten at a time. In one of their holes have been found two females, with twenty young. Specimens have sometimes been seen perfectly white, with red eyes.

Var.?

AMERICAN LONG-TAILED FIELD MOUSE.

Mr. Pennant adds this to the former species, imagining it to be a variety. It is similar in

most points to the European animal, but the hind legs are longer in proportion: a dark stripe runs down the back; the cheeks and sides are orange coloured, and the under parts are of a snowy whiteness; the ears are large, naked, and open; the whiskers very long, some of the hairs being white and some black; the tail dusky above, and whitish beneath. It is often found in the province of New York.

RUSTIC MOUSE.

Mus Agrarius. *M. cauda longa squamosa, corpore lutescente, striga dorsali nigra.* Lin. Syst. Nat. Gmel. p. 130. Pall. Glir. p. 95.

Yellowish-brown Mouse, with long scaly tail and black dorsal streak.

Rustic Mouse. Pennant Quadr. 2. p. 189.

THIS species is found in Germany, as well as in Russia and the more temperate parts of Siberia, inhabiting corn-fields, and frequenting granaries, &c. in the manner of the common field mouse. It sometimes appears in immense multitudes in particular seasons, and devours great quantities of grain. It is often found in company with the *common mouse*, the *harvest mouse*, and the *wood mouse*, and sometimes gets into houses, where it becomes so bold as to seize the very bread from the table, without shewing any symptoms of fear. This species burrows under ground, and collects provision for its winter sustenance, which it de-

positis in the end or chamber of its burrow. It is found of a much larger size in the cultivated regions about the river Ob and Jenesei than elsewhere. In general it is rather less than the field mouse, and is of a ferruginous colour above, and whitish beneath: on the back is a dusky line: the head is oblong, the nose sharp, and the ears small and lined with fur: above each foot is a dusky circle, and the tail is only half the length of the body.

HARVEST MOUSE.

Mus Messorius. *M. supra ferrugineus, subtus albus, cauda longa subpilosa, auriculis vellere longioribus.*

Ferruginous Mouse, white beneath, with long slightly hairy tail, and ears longer than the fur of the head.

Harvest Mouse. *Pennant Quadr. 2. p. 384.*

Brit. Zool. 1. p. 107.

White's Selb. p. 33 and 39.

THIS small species seems to have escaped the notice of British naturalists till it was observed by the late Mr. Gilbert White, of Selburne, in Hampshire, in which county it is frequent. Mr. White, in the year 1767, communicated the animal to Mr. Pennant, who introduced it into the *British Zoology.*

"These mice," says Mr. White, "are much smaller and more slender than the *mus domesticus medius* of Ray, and have more of the squirrel or dormouse colour: their belly is white; a strait

line along their sides divides the shades of their back and belly. They never enter into houses; are carried into ricks and barns with the sheaves; abound in harvest; and build their nest amidst the straws of corn above ground, and sometimes in thistles. They breed as many as eight at a litter, in a little round nest composed of the blades of grass or wheat. One of these nests I procured this autumn (1767), most artificially platted, and composed of the blades of wheat; perfectly round, and about the size of a cricket ball; with the aperture so ingeniously closed, that there was no discovering to what part it belonged. It was so compact and well filled, that it would roll across the table without being discomposed, though it contained eight little mice that were naked and blind. As this nest was perfectly full, how could the dam come at her litter respectively, so as to administer a teat to each? Perhaps she opens different places for that purpose, adjusting them again when the business is over; but she could not possibly be contained herself in the ball with her young, which moreover would be daily increasing in bulk. This wonderful procreant cradle, an elegant instance of the effects of instinct, was found in a wheat field, suspended in the head of a thistle."

Mr. White adds, that "though these animals hang their nests for breeding up amidst the straws of standing corn, above ground, yet in the winter they burrow deep in the earth, and make warm beds of grass; but their grand rendezvous

seems to be in corn-ricks, into which they are carried in harvest." A neighbour of Mr. White's housed an oat-rick, in which were some hundreds assembled under the thatch. The measure of the animal is just two inches and a quarter from nose to tail, and the tail just two inches long. Two of them in a scale just weighed down a copper halfpenny, which is about the third of an ounce avoirdupois, so that they may be considered as the smallest of the British quadrupeds.

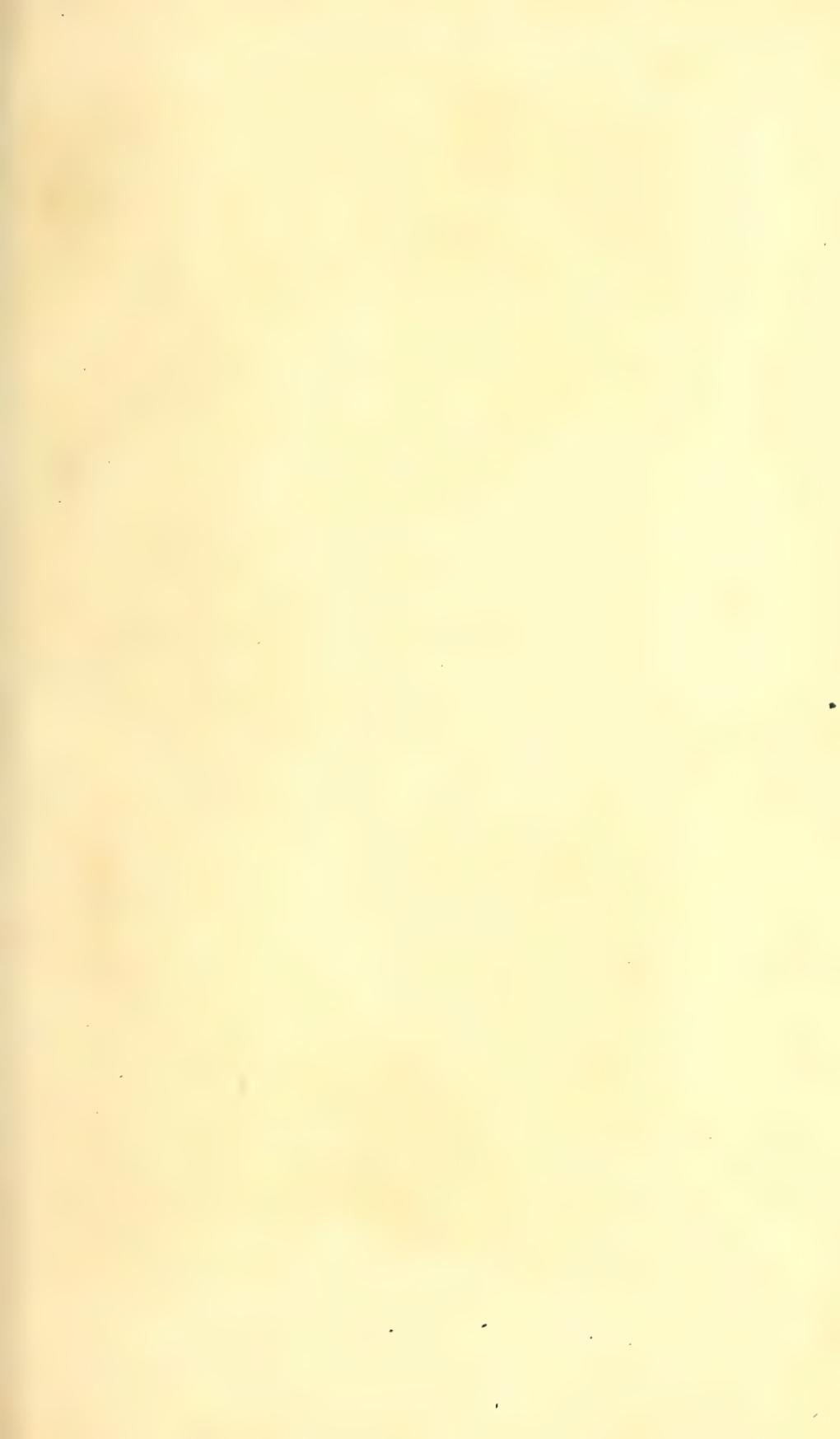
MINUTE MOUSE.

Mus Minutus. *M. cauda longa squamosa, corpore supra ferrugineo subtus albido.* Pall. Glir. p. 95. Lin. Syst. Nat. Gmel. p. 130.

Ferruginous Mouse, whitish beneath, with long scaly tail.

Little Mouse. Pennant Quadr. 2. p. 191.

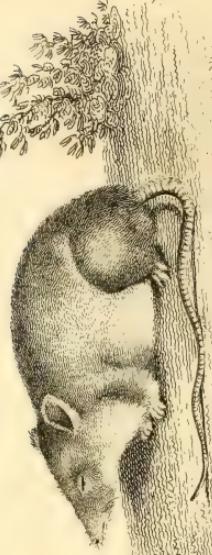
THIS species, according to Dr. Pallas, is frequent in the birch woods of Siberia, as well as in many of the temperate parts of Russia, frequenting corn-fields, and barns. Its general colour is a deep tawny above, and white below; the nose is sharpish and of a dusky colour, with a whiteness at the corners of the mouth: the ears are hid in the fur; the feet grey: the length from nose to tail is little more than two inches, and the weight not half a dram. Those found in Siberia are of a richer or more fulvous colour than those of other regions. This animal, Dr. Pallas says, is very frequent in autumn and winter in corn-



LINNEATED MOUSE.



SORCINE MOUSE.



STRIATED MOUSE.



ricks and about granaries, and is often found intermixed with the *Mus agrarius*, inhabiting similar places. It seems extremely nearly allied to the harvest mouse, and it is not impossible that it may in reality be the same animal; the differences appearing almost too slight for a specific distinction.

SORICINE MOUSE.

Mus Soricinus. M. cauda mediocri subpilosa, rostro producto, auriculis orbiculatis vestitis, vellere dorso flavicante griseo, ab domine albido. Lin. Syst. Nat. Gmel. p. 130.

Yellowish grey Mouse, with long snout, round furred ears, and hairy tail of moderate length.

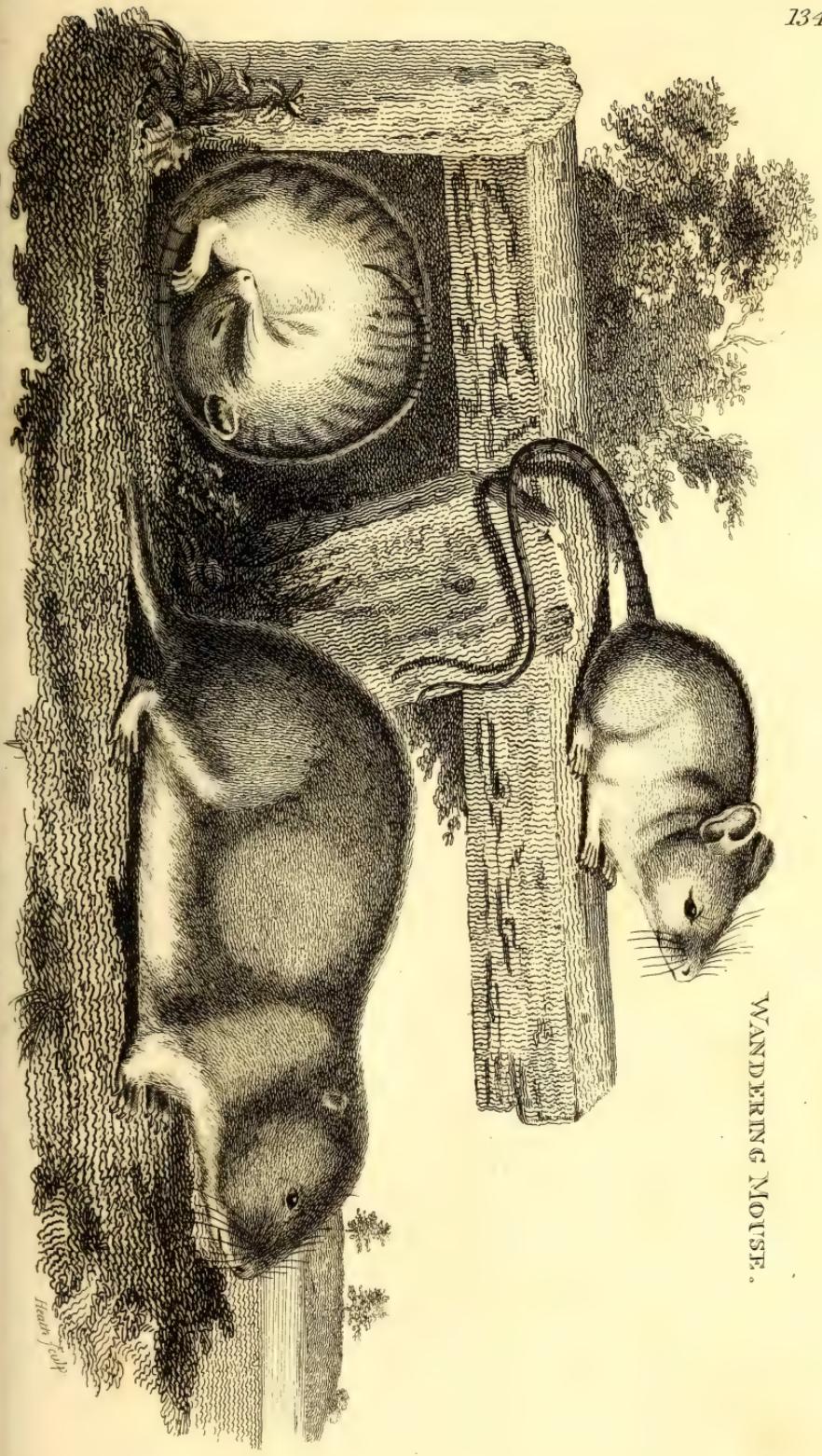
THIS is an extremely small species, and has the general appearance of a *Sorex* or Shrew, having a long and slender or sharp-pointed snout. It is a native of Strasburg, where it was first discovered by Professor Herman: its colour is a pale yellowish or subferruginous brown, whitish beneath: the ears are short and rounded, and are covered with hair. It measures two inches from nose to tail, and the tail is nearly of similar length, or rather a trifle longer.

WANDERING MOUSE

Mus Vagus. *M. cauda longissima nudiuscula, corpore cinereo, fascia dorsali nigra, auribus plicatis.* Lin. Syst. Nat. Gmel. p. 130.

Cinereous Mouse, with black dorsal band, very long naked tail, and plaited ears.

THIS, which was discovered by Dr. Pallas, is frequent throughout the whole Tartarian desert, and is of a migrating nature. It is a small species, scarce exceeding the *Mus minutus* in size, and measuring little more than two inches and a half from nose to tail, and the tail three inches. It is of a pale ash-colour above, slightly mixed or undulated with black, and marked with a black dorsal line: the ends of the limbs are whitish. This species wanders about in great multitudes, migrating from place to place chiefly by night. It is of a very tender or delicate nature, and even during the nights of June is often found rolled up, as if falling into a state of torpidity. It is said to inhabit chiefly the fissures of rocks, the cavities under large stones, or hollow trees.



BIRCH MOUSE.

WANDERING MOUSE.

BIRCH MOUSE.

Mus Betulinus. M. cauda longissima nudiuscula, corpore fulvo, fascia dorsali nigra, auriculis plicatis. Lin. Syst. Nat. Gmel. p. 131.

Fulvous Mouse, with black dorsal band, plaited ears, and very long naked tail.

THIS is so nearly allied to the *Mus vagus* that it might almost pass for the same species, or at least for a variety, but is still smaller than that animal, and scarcely exceeds two inches and a quarter in length; the tail being at least three inches, or longer in proportion than in the former. It inhabits the birch woods of Siberia, living in the hollows of decayed trees. Like the former, it is of a tender nature, and soon becomes torpid in cold weather. In ascending the branches of trees it is observed to coil round the twigs with its tail, in the manner of an opossum. Dr. Pallas has often observed it ascending the stems of some of the stronger grasses, which were scarcely bent with its weight. He also kept several of them a considerable time, which grew very tame, and delighted in being held in the hand. This species is of a rufous ash-colour above, and of a pale ash colour beneath, and along the back is a dusky line: the nose is pointed, and red at the tip: the ears small, brown, and bristled at the ends, and the limbs weak and slender.

LINEATED MOUSE.

Mus Pumilio. *M. cauda mediocri nudiuscula, corpore ex fusco cinereo, fronte nigra et lineis quatuor dorsalibus nigris.* Lin. Syst. Nat. Gmel. p. 131.

Cinereous-brown Mouse, with black front, four black dorsal lines, and nearly naked tail of middling length.

THIS small and elegant species was first described by Sparman, and is a native of the forest regions on the Slangen river, a great way eastward from the Cape of Good Hope. It is one of the least of the genus, being little more than two inches long from nose to tail. Its colours and other particulars are sufficiently described in the specific character.

STRIATED MOUSE.

Mus Striatus. *M. cauda longiuscula subnuda, corporis striis plurimis parallelis albo-guttatis.* Lin. Syst. Nat. Gmel. p. 131.

Rufous-brown Mouse, with longish naked tail, and the body marked by several longitudinal rows of white spots.

Mus orientalis. Seb. 2. p. 22. t. 21. f. 2.

Mus cauda longa, striis corporis longitudinalibus ex punctis albis. Lin. Mus. Ad. Frid. 1. p. 10.

THIS beautiful little animal was first described and figured by Seba, from whom other authors have taken their descriptions. It is about half the size of a common mouse, and is of a rufous or fulvous colour, with several parallel rows of

roundish white spots, disposed longitudinally along the upper parts of the body: the ears are short and roundish; the nose blunt; the tail thick and whitish, and of the same length with the body, and nearly naked. This species is, according to Seba, a native of India. He assures us that he purchased it alive of a sailor, who had brought it from India, and had tamed it to such a degree, that every day it would come out of its cage to be fed, and would sit on its master's shoulders, and even feed occasionally from his lips. Seba adds, that it continued equally tame while it lived with him; but, as if lamenting the loss of its former master, died in a short time. After this description, so particularly detailed by Seba, it seems strange that some authors have appeared to doubt the real existence of the animal as a genuine species. Dr. Pallas, however, seems to suspect that either the same, or a similar species, inhabits the regions about Mount Caucasus; having heard some reports of such an animal; yet confesses his doubt as to the specimen described by Seba, on account of his having discovered in Seba's collection a specimen inscribed *Mus striatus Indicus*, which was nothing more than the young of the striped *Barbary Squirrel* (*Sciurus Getulus*), with the tail still naked, or resembling that of a mouse.

BARBARY MOUSE.

Mus Barbarus. *M. cauda mediocri, corpore fusco striis decem pallidis, palmis tridactylis, plantis pentadactylis.* Lin. Syst. Nat. tom. I. p. 2. Addend.

Brown Mouse, marked with ten pale streaks; with tail of middling length, tridactyle fore-feet, and pentadactyle hind-feet.

THIS appears, from the description of Linnaeus, to be so nearly allied to the *M. striatus*, as scarce to be separated from it. It is, says Linnaeus, smaller than a common mouse, and is brown above, pale or whitish beneath: on each side the back are ten pale stripes, and sometimes a scarce perceptible line occurs between the lateral stripes. The fore feet have three unguiculated toes, and an obscure appearance of a fifth toe: the tail is naked, obscurely annulated, and of the length of the body. The animal is a native of Barbary.

To the above division of long-tailed species must be referred two which are figured and slightly described by Seba. One of these is adopted by Mr. Pennant, in the last edition of his History of Quadrupeds, under the title of the *Virginian Mouse*. It is figured at pl. 47, fig. 4, of the first vol. of Seba, and is called *Mus agrestis Americanus albus*. Its size seems to be that of the *Wood Mouse*; its colour entirely white; the eyes very small; the head large; the snout short but pointed, and the tail very thick at the base, and gradually tapering at the point.

The other species is called by Seba, *Mus Mexicanus maculatus*, and appears by its figure, pl. 45, fig. 5, of that author, to be about the size of a common mouse, and of the same general proportions; and is of a white colour, with a broad ferruginous band in front, passing beyond the eyes on each side; and on each side the body is also a large oblong patch of a similar colour: the tail seems naked. This Mr. Pennant calls the *Mexican Mouse*.

There is still another white species figured by Seba, and termed *Glis seu Mus Avellanarum Americanus albus*. It appears to be about the size of a very small rat, and has the habit of a Sorex or Shrew, the snout being very long and sharp, with numerous strong vibrissæ; the tail very slightly haired. It is figured on pl. 31 of Seba.

With hairy Tails, in general either of middling length, or short.

BLUE RAT.

Mus Cyanus. *M. cauda mediocri subpilosa, palmis tetradactylis, plantis pentadactylis, corpore cœruleo, subtus albido.* Lin. Syst. Nat. Gmel. p. 132. Molina Chil. p. 266.

Blue Rat, whitish beneath, with tetradactylous fore-feet, pentadactylous hind-feet, and slightly hairy tail of middling length. Sky-coloured Rat. Pennant Quadr. 2. p. 183.

THIS is a species described by Molina in his History of Chili, of which country it is a native, and is about the size of the wood rat (*M. Sylvaticus*)

cus), and of a fine pale blue colour, with rounded ears. It inhabits subterraneous burrows, which it forms of the length of many feet, and on each side of which are several holes or receptacles in which it deposits its winter provisions, consisting chiefly of tuberous roots, &c. It is a timid animal, and is also said to be very cleanly. It breeds twice a year; producing six at a time. The peasants of Chili frequently rob the subterraneous retreats of this species of the hoards which they contain.

ROCK RAT.

Mus Saxatilis. *M. cauda longiuscula, auribus vellere majoribus, palmis subtetradactylis.* Lin. Syst. Nat. Gmel. p. 131.

Greyish-brown Rat, with longish tail, ears longer than the fur, and subtetradactyloous fore-feet.

Rock Rat. Pennant Quadr. 2. p. 192.

THE Mus Saxatilis or Rock Rat was first described by Dr. Pallas, and measures four inches, exclusive of the tail, which is an inch and half long. The head is oblong; the nose rather pointed; the ears rising above the fur; oval, downy, and brown at the edges; the whiskers short, and the limbs strong. The colour of the animal is brown above, slightly mixed with grey; the sides inclining still more to the latter colour; the belly light cinereous, and the snout dusky, surrounded by a white ring. It is a native of Siberia, and is principally found beyond Lake Bai-

kal, and the Mongolian desert. It makes its burrows in a wonderful manner, considering the weakness of its feet, between the fissures of rocks which have been forced open either by the violence of frost, or the insinuation of the roots of plants. It chuses its situation amidst the rudest rocks, forming a large oblique or winding passage through which it flings out the earth, and from this passage proceeds another hole (and sometimes there are two), pointing downwards, and winding among the rocks, and in the bottom is situated the nest, composed of soft herbs. The principal food of this species, according to Dr. Pallas, consists of the seeds of various species of *Astragalus* or Milk-Vetch.

WATER RAT.

Mus Amphibius. *M. cauda longitudine dimidia corporis, auribus vix vellere prominulis, pedibus subtetradactylis.* Lin. Syst. Nat. Gmel. p. 132. Pall. glir. p. 80.

Blackish-brown Rat, ash-coloured beneath, with ears scarce projecting from the fur, subtetradactyle fore-feet, and tail about half the length of the body.

Mus cauda elongata pilosa, plantis palmatis. Lin. Syst. Nat. p. 82.

Mus agrestis major. Gesn. Quadr. p. 733.

Le Rat d'eau. Buff. 7. p. 368. pl. 43.

Water Rat. Pennant Quadr. 2. p. 182.

THE Water Rat is a general inhabitant of the temperate, and even the colder parts of Europe and Asia, and occurs also in North America; fre-

quenting rivers and stagnant waters, and forming its burrows in the banks. It is of a thicker and shorter form than many others of this genus, and has somewhat of the shape of a beaver. Mr. Ray, following an error of Willoughby, describes it as having the fore feet webbed; and Linnæus, in his *Systema Naturæ*, characterizes it from that very circumstance, but acknowledges that he had not himself examined the animal. In reality, however, there is no such appearance in the feet of the Water Rat, and the notion seems to have been hastily adopted from observing the facility with which it swims and dives. The general length of the Water Rat is about seven inches, and the tail about five. Its colour is blackish ferruginous above, and deep cinereous beneath: the nose is thick and blunt; the eyes small; the ears rounded and hid in the fur. In colour it appears to vary in different regions, being sometimes nearly black, and sometimes paler than usual. It also varies as to size, and the varieties have been mistakenly considered as distinct species. This animal never frequents houses, but confines itself to the banks of waters, and is supposed to live on fish, frogs, &c. and probably on various roots and other vegetable substances. Dr. Pallas, however, is unwilling to admit that it preys at all upon fish, though reported so to do by the Count de Buffon and others. At some seasons of the year it is observed to have a musky scent. The female produces her young in April, and generally brings about five or six at a time.

The measures of this species, as given by Mr. Schreber, are as follow, viz. from nose to tail six inches and a half; and of the tail three inches. The figure engraved in Count de Buffon's Natural History is excellent, and is copied in the present publication.

SCHERMAN RAT.

Mus Scherman. *M. cauda mediocri subpilosa, corpore supra fusco, subtus cinereo, pedibus parvis, auriculis vellere brevioribus.* Deep-brown Rat, cinereous beneath, with slightly hairy tail of moderate length, small feet, and ears shorter than the fur.

Scherman Rat. *Pennant Quadr. 2. p. 182.*

THIS species is said to be common about the neighbourhood of Strasburg, and appears to have been first described by Mr. Hermann, who in the year 1776 communicated a specimen to Count de Buffon. The length of the animal from nose to tail is six inches; of the tail about two inches and three quarters: the head is rather short; the snout thick; the eyes small, and the ears almost as short as those of a mole, and concealed beneath the fur. The general colour of the fur is a blackish brown, mixed with grey tawny; the hair being blackish at the root, and tawny towards the tip: the edges of the mouth are bordered with short white hairs, and the whiskers are black: the under parts of the body are of a mouse grey; the legs, which are short, are covered with dusky hair, as are also the feet, which are very small: the tail is

hairy, but not so well covered as that of the water rat. This animal resides in watery places and about gardens at Strasburgh, and is said to be very destructive to the plants in cultivated grounds. It swims and dives extremely well, and also burrows occasionally under ground.

LEMMING RAT.

Mus Lemmus. M. brachyurus, auriculis vellere brevioribus, palmis pentadactylis, corpore fulvo nigro alboque vario, subtus albo.
Lin. Syst. Nat. Gmel. p. 136.

Short-tailed Rat, with ears shorter than the fur, pentadactylous fore-feet, and body white beneath, variegated above with black, white, and fulvous.

Mus cauda abbreviata, pedibus pentadactylis, corpore fulvo nigro-vario. *Lin. Syst. Nat. p. 80.*

Lemmus. *Gesn. Quadr. p. 731.*

Bestiola Léem dicta. *Aldr. dig. p. 436. Jonst. p. 168.*

Leming. *Buff. 13. p. 314.*

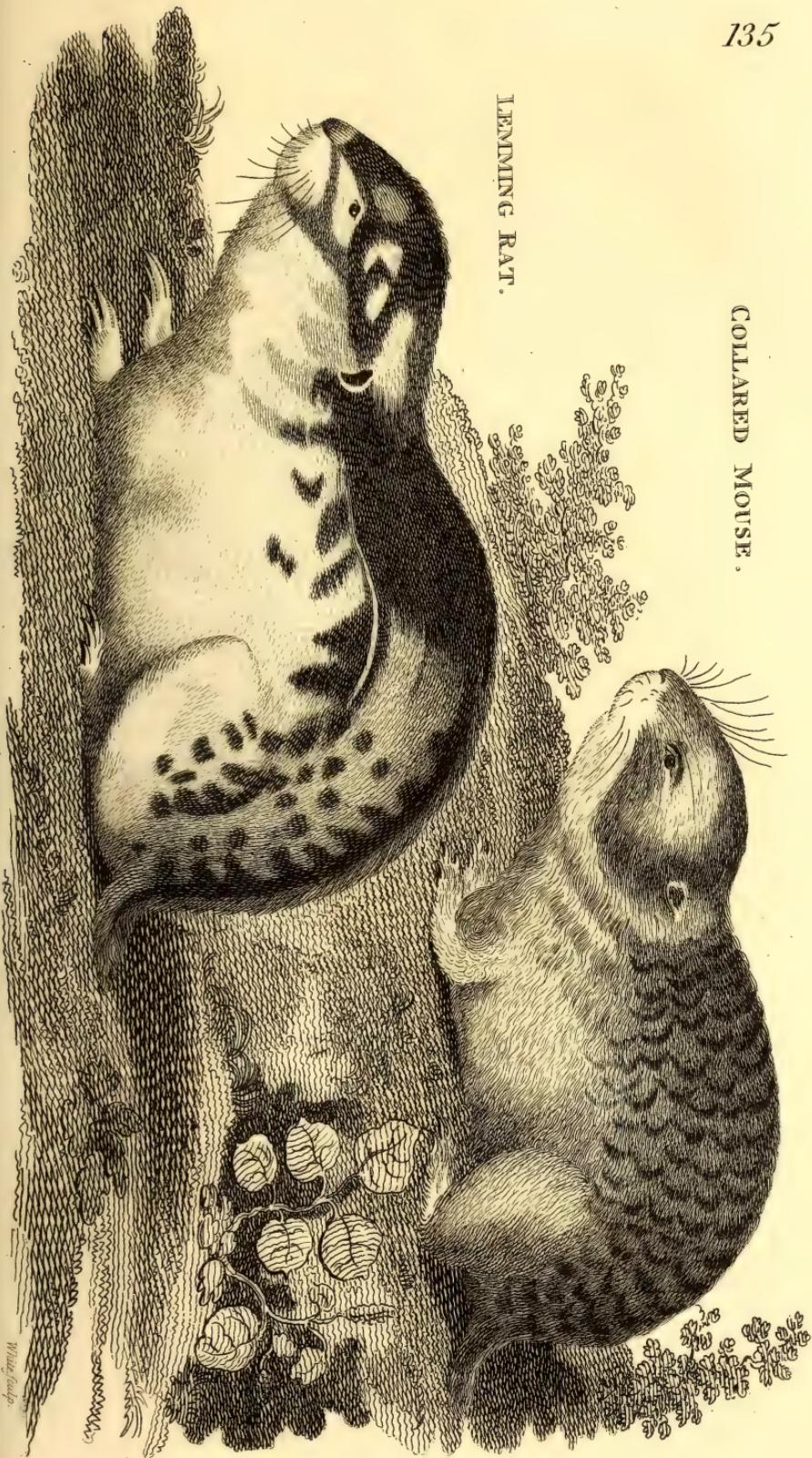
Lemmus. *Pennant Quadr. 2. p. 198.*

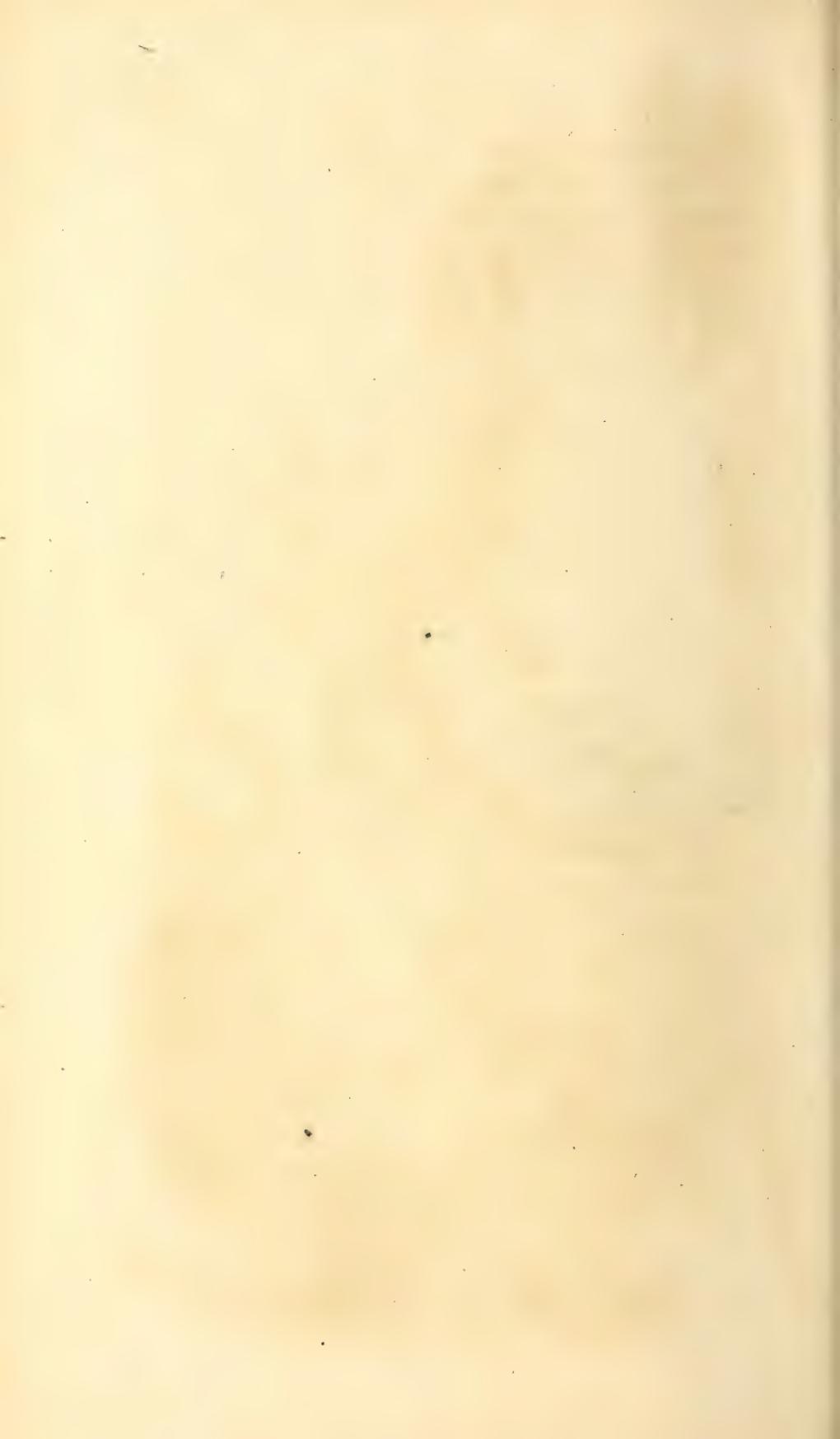
THE wonderful migrations of this species have long rendered it celebrated in the annals of natural history : it is remarkable, however, that no accurate figure of it was published till Dr. Pallas caused it to be engraved in his excellent work on the Glires.

The first describer of the Lemming seems to have been Olaus Magnus, from whom several of the older naturalists have copied their accounts. Afterwards Wormius gave a more particular description ; since which, Ricaut, in the Philosophical

COLLARED MOUSE.

LEMMING RAT.





Transactions, Linnæus, in the *Acta Holmiensis*, and Dr. Pallas, in his publication before mentioned, have still farther elucidated its history and manners.

The Lemming differs in size and colour according to the regions it inhabits: those which are found in Norway being almost as large as a water rat, while those of Lapland and Siberia are scarce larger than a field mouse; the Norwegian measuring more than five inches from nose to tail, while those of Lapland and Siberia scarce exceed three. The colour of the Norway kind is an elegant variegation of black and tawny on the upper parts, disposed in patches and clouded markings: the sides of the head and the under parts of the body being white; the legs and tail greyish. In the Lapland kind the colour is chiefly a tawny brown above, with some indistinct dusky variegations; and beneath of a dull white: the claws are also smaller than in the Norwegian animal. The head of the Lemming is large, short, thick, and well furred; the snout very obtuse; the ears very small, rounded, and hid in the fur; the eyes small; the neck short and broad; the body thick; and the limbs short and stout, especially the fore legs: the fore-feet are broad, furnished with five toes, which have strong, compressed, and somewhat crooked claws, of which the three middle ones are longer than the rest: on the hind-feet are also five toes, with smaller claws than those of the fore-feet: the tail is very short, thick, cylind-

dric, obtuse, and covered with strong hairs, disposed like those of a pencil at the tip.

The natural or general residence of the Lemming is in the Alpine or mountainous parts of Lapland and Norway, from which tracts, at particular but uncertain periods, it descends into the plains below, in immense troops, and by its incredible numbers becomes a temporary scourge to the country; devouring the grain and herbage, and committing devastations equal to those caused by an army of locusts. These migrations of the Lemming seldom happen oftener than once in ten years, and in some districts still less frequently, and are supposed to arise from an unusual multiplication of the animals in the mountainous parts they inhabit, together with a defect of food; and, perhaps, a kind of instinctive prescience of unfavourable seasons; and it is observable that their chief migrations are made in the autumn of such years as are followed by a very severe winter. The inclination, or instinctive faculty which induces them, with one consent, to assemble from a whole region, collect themselves into an army, and descend from the mountains into the neighbouring plains, in the form of a firm phalanx, moving on in a strait line, resolutely surmounting every obstacle, and undismayed by every danger, cannot be contemplated without astonishment. All who have written on the subject agree that they proceed in a direct course, so that the ground along which they have passed appears at a distance as

if it had been ploughed ; the grass being devoured to the very roots, in numerous stripes, or parallel paths, of one or two spans broad, and at the distance of some ells from each other. This army of mice moves chiefly by night, or early in the morning, devouring the herbage as it passes, in such a manner that the surface appears as if burnt. No obstacles which they happen to meet in their way have any effect in altering their route ; neither fires, nor deep ravines, nor torrents, nor marshes, or lakes : they proceed obstinately in a strait line ; and hence it happens that many thousands perish in the waters, and are found dead by the shores. If a rick of hay or corn occurs in their passage, they eat through it ; but if rocks intervene, which they cannot pass, they go round, and then resume their former strait direction. If disturbed or pursued while swimming over a lake, and their phalanx separated by oars or poles, they will not recede, but keep swimming directly on, and soon get into regular order again ; and have even been sometimes known to endeavour to board or pass over a vessel. On their passage over land, if attacked by men, they will raise themselves up, uttering a kind of barking sound, and fly at the legs of their invaders, and will fasten so fiercely at the end of a stick, as to suffer themselves to be swung about before they will quit their hold ; and are with great difficulty put to flight. It is said that an intestine war sometimes takes place in these armies during their migrations, and that the animals thus destroy each other.

The major part, however, of these hosts is destroyed by various enemies, and particularly by owls, hawks, and weesels, exclusive of the numbers which perish in the waters ; so that but a small number survive to return, which they are sometimes observed to do, to their native mountains.

In their general manner of life they are not observed to be of a social disposition, but to reside in a kind of scattered manner, in holes beneath the surface, without laying up any regular provision, like some other animals of this tribe. They are supposed to breed several times in a year, and to produce five or six at once. It has been observed that the females have sometimes brought forth during their migrations, and have been seen carrying some in their mouths, and others on their backs. In some parts of Lapland they are eaten, and are said to resemble squirrels in taste.

It was once believed that these animals fell from the clouds at particular seasons, and some have affirmed that they have seen a Lemming in its descent ; but an accident of this kind is easily accounted for, on the supposition of a Lemming escaping now and then from the claws of some bird which had seized it, and thus falling to the ground ; a circumstance which is said not unfrequently to take place when the animals are seized by crows, gulls, &c.



MEADOW MOUSE.

MEADOW MOUSE.

Mus Arvalis. *M. cauda unciali, auriculis vellere prominulis, palmis subtetradactylis, corpore fusco.* Lin. Syst. Nat. Gmel. p. 134. Pall. Glir. p. 74. No. 19.

Dusky-ferruginous short-tailed Rat, deep ash-coloured beneath, with ears longer than the fur, and subtetradactylous fore-feet.

Mus gregarius. Lin. Syst. Nat. ed. 12. p. 85.

Short-tailed Field Mouse. Brit. Zool. No. 31.

Meadow Mouse. Pennant Quadr. 2. p. 205.

Le Campagnol. Buff. 7. p. 369. pl. 47.

THIS species, which is very common in our own island, is readily distinguished from the rest of the British species by the shortness of its tail; measuring, according to Mr. Pennant, six inches from nose to tail; the tail being only an inch and half long. The colour of the animal is dusky ferruginous above, and deep ash-coloured beneath. It is a general inhabitant of Europe, and even extends to Siberia. It is also found in equal plenty in many parts of North America. In its manners it resembles the *Mus sylvaticus* or long-tailed Field Mouse; but is more commonly found in moist rather than dry situations. It makes its nest in meadows, and produces a litter of about eight at a time. Its favourite food is corn, which it amasses during harvest-time. It is frequently found in corn-ricks and barns, and often in company with the harvest mouse (*M. minutus?*) as well as with the long-tailed field mouse (*M. sylvaticus*). I know not how to reconcile the difference between the measures attributed to this

species by the Count de Buffon and Mr. Pennant; the former fixing its length at three inches, and the latter at six. It probably varies much in different climates, and accordingly the Count de Buffon tells us, that he had seen some which measured four inches and three lines from nose to tail. He also records a specimen, taken in the park of Versailles, which was entirely of a blackish ash-colour, and which had a tail of greater length than usual. Perhaps this dark-coloured variety may be the same with the *Mus (agrestis) cauda abbreviata, corpore nigro-fusco, abdomine cinerascente*, described by Linnæus, in the 2d edition of his *Fauna Suecica*.

Mr. Pennant has recorded a remarkable instance of attachment in the Meadow Mouse to its young. One which had been seduced into an iron trap by placing its brood in it, was so intent on fostering them as to appear quite insensible to its own state of captivity.

COLLARED MOUSE.

Mus Torquatus. *M. brachyurus, auribus vellere brevioribus, palmis pentadactylis, corpore ferrugineo vario, torque interrupta albida, linea spinali nigra.* Lin. Syst. Nat. Gmel. p. 136. Pall. Glir. p. 206.

Short-tailed ferruginous Mouse, with dusky variegations, ears shorter than the fur, pentadactyle fore-feet, interrupted white collar, and black spinal stripe.

Ringed Mouse. *Pennant Quadr. 2. p. 201.*

IN shape and general appearance this species is much allied to the Lemming, but differs in the disposition of its colours, as well as in size; being smaller than the Siberian and Lapland varieties of that animal. It is a native of those parts of Siberia which border on the river Oby, where it is more common than the Lemming, and makes occasional migrations, which are said to happen in the same year with those of the Lemming. The size of this species is that of a large meadow mouse: its colour on the upper parts is an elegant ferruginous, variegated with numerous small dusky undulations; and round the neck is a white collar, while the forehead and top of the head are dusky, which colour curves down beyond the cheeks on each side, so as to form a dusky collar next to the white one: the cheeks are white, as is also the belly: the breast and sides are tinged with light orange-colour: the tail is extremely short, and is brown, tipped with white hairs. This species is said to feed chiefly on the reindeer lichen (*Lichen rangiferinus*) and the vivipa-

rous Bistort (*Polygonum viviparum*), the roots of which are often found in its holes or burrows, which are formed with several passages which it digs under the turfey soil.

HARE-TAILED MOUSE.

*Mus Lagurus. M. brachyurus, auriculis vellere brevioribus, pal-
mis subtetradactylis corpore cinereo, linea longitudinali nigra.
Lin. Syst. Nat. Gmel. p. 135. Pall. Glir. p. 218.*

Short-tailed cinereous Mouse, white beneath, with ears shorter than the fur, subtetradactylous fore-feet, and black dorsal line.

Hare-tailed Rat. *Pennant Quadr. 2. p. 202.*

THIS species, which is also of the migratory kind, is considerably smaller than the Lemming, but of nearly similar shape, and of a fine pale brown above, with blackish hairs intermixed, and has a black dorsal line or stripe running from the nose to the tail, which is extremely short and villose, so as to resemble the scut of a hare in miniature : the throat, belly, and feet, are white. This little animal delights in dry, sandy plains of the harder kind, where it can form its burrows : it feeds chiefly on the roots of the dwarf Iris (*Iris pumila*), as well as on grain and several other plants and seeds, even such as are bitter, as the Pontic and sea Wormwood. It is an animal of a fierce disposition, and makes a considerable resistance when taken. The length of this species is between three and four inches. It inhabits Siberia, and particularly the parts above the Yaik,

Irtish, and Jenesei. It is an animal that sleeps much; rolling itself up like the marmot, and sometimes migrates, in great troops, from one part of the country to another.

ŒCONOMIC RAT.

Mus Œconomus. *M. cauda subsesquiuncialis, auriculis nudis in vellere molli latentibus, palmis subtetradactylis, corpore fusco.*
Lin. Syst. Nat. Gmel. p. 134. Pall. Glir. p. 79. No. 15.

Short-tailed tawny Rat, whitish beneath, with naked ears concealed by the fur, and subtetradactyle fore-feet.

Œconomic Rat. *Pennant Quadr. 2. p. 194.*

THE Œconomic Rat, so named from its provident disposition and the skill with which it collects its provisions, is a native of Siberia, inhabiting that country in vast abundance, and even extending as far as Kamtschatka. Its curious history has been given with great exactness by Dr. Pallas, who informs us that these little animals make their burrows with wonderful skill immediately below the surface in soft turfey soils, forming a chamber, of a flattish arched form, of a small height, and about a foot in diameter, to which they sometimes add as many as thirty small pipes or entrances, and near the chamber they frequently form other caverns, in which they deposit their winter stores; these are said to consist of various kinds of plants, even of some species which are poisonous to mankind. They gather them in summer, harvest them with great care, and even

sometimes bring them out of their cells in order to give them a more thorough drying in the sun. The chief labour rests on the females ; the males during the summer wandering about in a solitary state, inhabiting some old nests occasionally, and living during that period on berries, without touching the hoards, which are reserved for winter, when the male and female reside together in the same nest. They are said to breed several times in the year, the female producing two or three young at a time.

The migrations of this little species are not less extraordinary than those of the Lemming, and take place at uncertain periods. Dr. Pallas imagines that the migrations of those inhabiting Kamtschatka may arise from some sensations of internal fire in that volcanic country, or from a prescience of some unusual and bad season. Whatever be the cause, the fact is certain : at such periods they gather together, during the spring season, in surprising numbers, except the few that reside about villages, where they can pick up some subsistence ; and this makes it probable that their migrations, like those of the Lemming, are rather owing to want of food. The mighty host proceeds in a direct course westward, occasionally swimming with the utmost intrepidity over rivers, lakes, and even arms of the sea. During these perilous adventures, some are drowned, and others destroyed by water-fowl, fish, &c. : those which escape rest a while to bask, dry their fur, and refresh themselves, and then again set out on their

migration. It is said that the inhabitants of Kamtschatka, when they happen to find them in this fatigued situation, treat them with the utmost tenderness, and endeavour by every possible method to refresh and restore them to life and vigour. Indeed none of the smaller animals are so much esteemed by the Kamtschadales as these; since to their labours they owe many a delicious repast; robbing their hoards in autumn, and leaving there some kind of provision in return, accompanied by some ridiculous presents by way of amends for the theft. As soon as the migrating host of these animals has crossed the river Penschim, at the head of the gulph of that name, it turns southward, and reaches the rivers Jedomo and Ochot about the middle of July: the space thus traversed appears astonishing, on consulting the map of the country. The flocks, during this time, are so numerous that an observer has waited two hours to see them all pass. Their return into Kamtschatka is in October, and is attended with the utmost festivity and welcome on the part of the natives, who consider their arrival as a sure prognostic of a successful chase and fishery; and they are said equally to lament their migrations, which are usually succeeded by rainy and tempestuous weather.

This curious species is generally of a tawny colour, darker on the back, and lighter or more approaching to an ash-coloured whiteness beneath: its usual length is about four inches and a quarter, and the tail one inch: its limbs are strong; its

eyes small, its ears naked, very short and round, and almost hid beneath the fur of the head.

This animal is also supposed to be an inhabitant of Iceland ; at least a species which must be greatly allied to it is found in that country, and is said to be particularly plentiful in the wood of Husafels. In that country, where berries are but thinly dispersed, the little animals are obliged to cross rivers to make their distant foraging excursions ; and in their return are obliged to repass the stream ; their manner of performing which is thus related by Mr. Olaffen, from the accounts of others, communicated to himself :

“ The party, consisting of from six to ten, select a flat piece of dried cow-dung, on which they place the berries they have collected, in a heap, on the middle ; and then, by their united force, drawing it to the water’s edge, launch it, and embark, placing themselves round the heap, with their heads joined over it, and their backs to the water, their tails pendent in the stream, and serving the purpose of rudders.”

Var. ?

Mus Glareolus. Schreber, p. 679. pl. 190. B.

THIS, from Mr. Schreber’s figure, appears to be about the size of a common mouse, and of an uniform pale ferruginous colour, whitish beneath ; the head seems very large, and without any visible distinction of neck ; the body tapering from

the shoulders : the limbs small and slender, and the tail about an inch long : the eyes very small ; the ears entirely hid in the fur, and the nose rather inclining to a sharp form. It was observed by Mr. O. F. Müller, in the year 1777, in the island of Laland, among some sea lyme-grass (*Elymus arenarius*), growing on the sand near the shore. Nothing particular is known of its manners, and it remains doubtful whether it be a distinct species or a variety of the œconomic mouse.

GARLIC MOUSE.

Mus Alliarius. *M. cauda unciali, auribus majusculis subpilosis, corpore cinereo subtus albido.* Lin. Syst. Nat. Gmel. p. 133.
Pall. Glir. p. 252.

Cinereous Mouse, whitish beneath, with rather large slightly hairy ears, and tail about an inch in length.

Garlic Mouse. Pennant Quadr. 2. p. 197.

THE Garlic Mouse was first described by Dr. Pallas, who informs us that it is a native of Siberia, where it is chiefly found about the Jenesei and Lena, and is frequent in the subterraneous magazines of bulbous roots, especially the *Allium angulatum*, or angular garlic, formed by the Siberian peasants. It is very nearly allied to the meadow mouse, but the ears are larger, and the body is of a cinereous colour above, and whitish beneath ; it measures somewhat more than four inches from nose to tail, and the tail about an

inch and half; the tail is also marked along the top with a dusky line, the remainder being white.

RED MOUSE.

Mus Rutilus. *M. cauda unciali, auriculis vellere longioribus, palmis subtetradactylis, corpore supra fulvo subtus cano.* Lin.
Syst. Nat. Gmel. p. 133. Pall. Glir. p. 246.

Fulvous Mouse, ash-coloured beneath, with tail about an inch long, ears longer than the fur, and subtetradactyle fore-feet.

Red Mouse. *Pennant Quadr. 2. p. 196.*

THE length of this species is not quite four inches, and the tail is somewhat more than one inch long, and very hairy: the nose and face are bristly, the ears very small, but longer than the fur; bare, but edged at the tips with reddish hairs. The colour of the animal on the upper parts is a pleasant tawny red; the sides tinged with light yellowish-grey, and the under parts are whitish. It is a native of Siberia, and is found from the Oby eastward to Kamtschatka, in woods and mountains; and also within the arctic circle. It sometimes frequents houses and granaries; and is often found under logs of wood, trunks of trees, &c. It is said to wander about during the whole winter; seemingly unaffected by the severity of the season. A variety somewhat smaller has been found about Casan, having a longer and thinner tail. It is also said to have been discovered in the neighbourhood of Gottingen.

WOOLLY MOUSE.

Mus Laniger. *M. cauda mediocri, palmis tetradactylis, plantis pentadactylis, corpore cinereo lanato.* Lin. Syst. Nat. Gmel. p. 134. Molin. Hist. Chil. p. 267.

Ash-coloured Woolly Mouse, with tetradactyle fore-feet, pentadactyle hind-feet, and tail of middling length.

Woolly Rat. Pennant Quadr. 2. p. 196.

The Woolly Mouse is a South American species, and is a native of Chili, where it resides in subterraneous retreats, in a gregarious manner, and feeds on various kinds of roots. It breeds twice a year, bringing five or six at a time. It is said to be an animal of a very mild and gentle disposition, very easily tamed, and often rendered domestic. The ancient Peruvians are said to have manufactured various valuable articles from its fur, which is of a woolly nature, long, and of exquisite fineness. This species is of a cinereous colour, and measures about six inches: the ears are very small; the nose short, and the tail of middling length.

BAIKAL MOUSE.

Mus gregalis. M. cauda sesquiunciali, auriculis vellere longioribus, palmis subtetradactylis, corpore cinerascente. Lin. Syst. Nat. Gmel. p. 133. Pall. Glir. p. 238.

Grey Mouse, with ears shorter than the fur, subtetradactyle forefeet, and tail about an inch and half long.

Baikal Rat. Pennant Quadr. 2. p. 204.

THIS species is a native of Siberia, and forms its nest beneath turf ground, with several minute entrances. It is supposed to feed chiefly on the roots of the *Lilium pomponium*, and *Allium tenuissimum*, which it collects for its winter provision. The male and female, together with the young of one year's age, reside in the same retreat. This species is not observed to migrate. It varies in size, and the males are in general much smaller than the females. The usual length seems to be about four inches, and the tail about an inch and half; but some of the males do not exceed three inches from nose to tail.

SOCIAL MOUSE.

Mus Socialis. *M. cauda semiunciali, auriculis orbiculatis brevissimis, palmis subtetradactylis, corpore pallido subtus albo.* Lin. *Syst. Nat. Gmel. p. 135.* Pall. *Ghir. p. 705.*

Pale-grey Mouse, white beneath, with very short rounded ears, subtetradactyle fore-feet, and tail of half an inch in length.

Social Rat. *Pennant Quadr. 2. p. 203.*

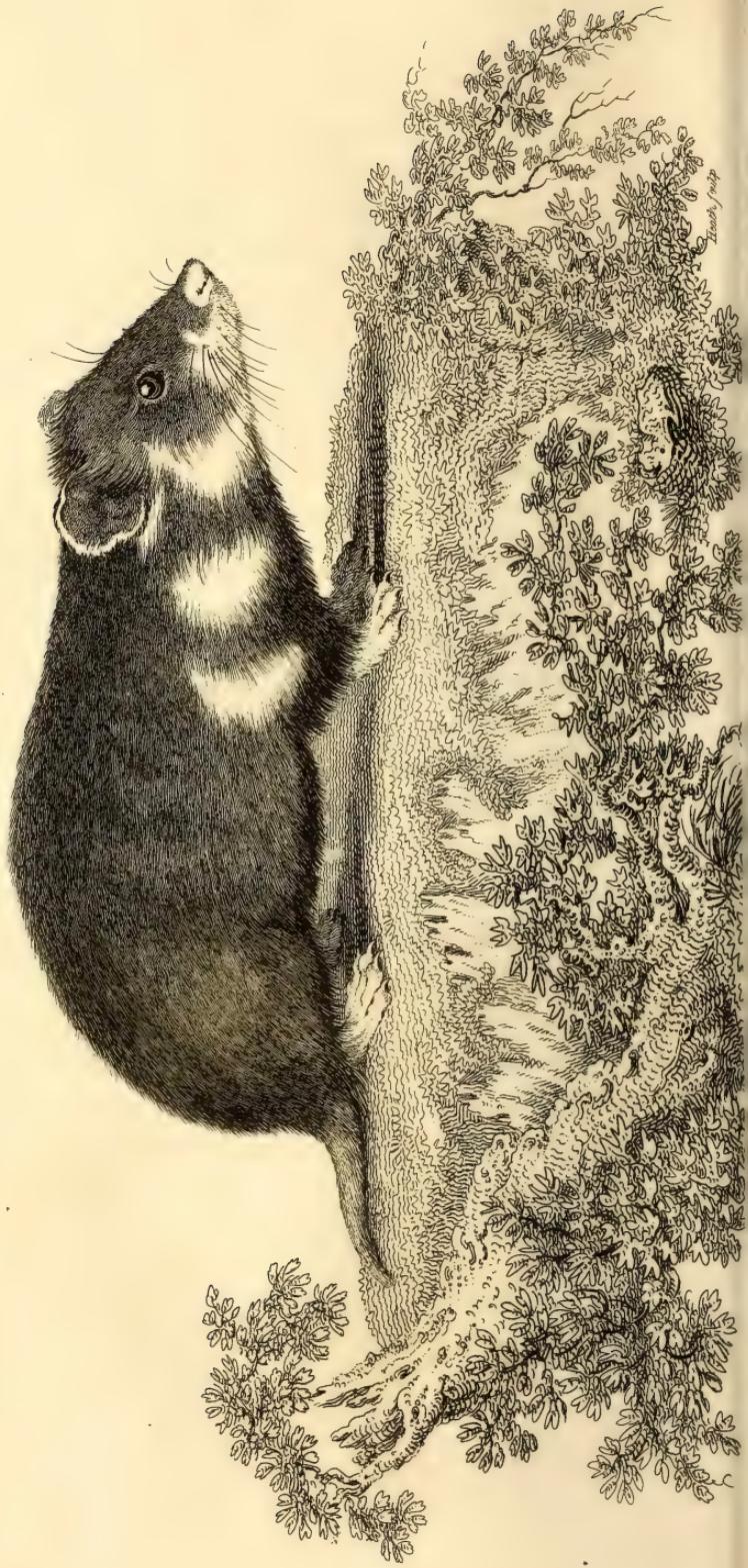
The Social Mouse is a native of the Caspian deserts between the Volga and the Yaik, and the country of Hircania. It lives in low sandy situations, in large societies; the ground in many places being covered with the little hillocks formed by the earth cast out in forming the burrows, which are said to be about a span deep, with eight or more passages. The animals are always observed to live in pairs, or with a family; they are fond of tulip-roots, which form a principal article of their food. They appear chiefly in the spring, when they are very numerous, but are rarely seen in autumn, and are supposed either to migrate in autumn or to conceal themselves among the bushes, &c. and in the winter to shelter themselves in hay-ricks. The head in this species is thick, and the nose blunt; the whiskers white; the ears oval and naked; the limbs short and strong, and the tail slender. The upper parts are of a light grey, and the under, white.

HUDSON'S BAY MOUSE.

Mus Hudsonius. *M. brachyurus, auriculis nullis, plantis pentadactylis, vitta dorsali ex luteo fuscescente, pectore et abdомine albis.* Lin. Syst. Nat. Gmel. p. 137. Pall. Glir. p. 209.
Short-tailed earless ash-coloured Mouse, white beneath, with
yellowish brown dorsal stripe, and pentadactyle hind-feet.
Hudson's Rat. Pennant Quadr. 2. p. 201.

THE length of this species is about five inches, and the colour a pale cinereous, tinged with tawny, and marked with a brownish dorsal stripe: the fur is long and very soft; the limbs short and strong; the tail very short, and terminated by bristly hairs: the female is smaller than the male, which is also distinguished by the superior size and strength of the two middle claws of the fore-feet, which are not only very thick and stout, but are bifid at their extremities. This species is described by Dr. Pallas from some skins which were received from Labrador. Its particular history and manners seem to be unknown.

HAMSTER RAT.



*With Cheek-pouches for the temporary Reception of
their Food.*

HAMSTER RAT.

Mus Cricetus. *M. buccis sacculiferis, corpore subitus aterrimo,
cicatriculis lumbaribus detonsis.* *Lin. Syst. Nat. Gmel. p. 137.
Pall. Glir. p. 83.*

Reddish-brown pouched Rat, with three white spots on each side, and deep black abdomen.

Mus cauda mediocri, auriculis rotundatis, corpore subitus nigro, lateribus rufescensibus, maculis tribus albis. *Lin. Syst. Nat. p. 82.*

Hamster. *Buff. 13. p. 117. pl. 14. and Suppl. 3. p. 183.*

Hamster Rat. *Pennant Quadr. 2. p. 206.*

OF the pouched rats the Hamster is the most remarkable, and indeed is the only European species provided with those peculiar receptacles, which are situated on each side the mouth, and when empty are so far contracted as not to appear externally, but when filled resemble a pair of tumid bladders; having a smooth veiny surface; concealed, however, under the fur or skin of the cheeks *, which bulge out extremely in this state. They are so large as to hold the quantity of a quarter of a pint, English measure.

The general size of the Hamster is nearly that of a brown or Norway rat, but it is of a much

* In the figure of these parts engraved in Buffon's Natural History, Vol. XIII. pl. 16, they are represented as situated under the skin of the cheeks, which has been divided in order to display them; and in Daubenton's accurate description they are expressly said to be covered by the common integuments.

thicker form, and has a short tail. Its colour is a pale reddish brown above, and black beneath. The muzzle is whitish, the cheeks reddish, and on each side the body are three moderately large oval white spots, of which those on the shoulders are the largest: the ears are moderately large and rounded, and the tail almost bare, and about three inches long: on the fore-feet are four toes, with a claw in place of a fifth; and on the hind-feet are five toes. Sometimes the Hamster varies in colour, being found either black with a white muzzle, or of a pale yellowish white. The male is always much larger than the female. On each side the lower part of the back is an almost bare spot, covered only with very short down.

The Hamster inhabits Siberia and the south of Russia. It is also found in Poland, as well as in many parts of Germany. They are very destructive in some districts, devouring great quantities of grain, which they carry off in their cheek-pouches, and deposit in their holes in order to devour during the autumn. The habitations which they dig, to the depth of three or four feet, consist of more or fewer apartments, according to the age of the animal: a young Hamster makes them hardly a foot deep; an old one sinks them to the depth of four or five feet, and the whole diameter of the residence, taking in all its habitations, is sometimes eight or ten feet. The principal chamber is lined with dried grass, and serves for a lodging; the others are destined for the preservation of provisions, of which he amasses

a great quantity during the autumn. Each hole has two apertures ; the one descending obliquely, and the other in a perpendicular direction, and it is through this latter that the animal goes in and out. The holes of the females, who never reside with the males, are somewhat different in their arrangement, and have more numerous passages. The female breeds two or three times a year, producing five or six, and sometimes as many as sixteen or eighteen *. The growth of the young is rapid, and they are soon able to provide for themselves.

The Hamster feeds on all kinds of herbs and roots, as well as on grain, and even occasionally on the smaller animals. “ In harvest time (says Mr. Allamand) he makes his excursions for provision, and carries every article he can find into his granary. To facilitate the transportation of his food, Nature has provided him with two pouches in the inside of each cheek. On the outside these pouches are membranous, smooth, and shining, and in the inside are a great many glands, which continually secrete a certain fluid, to preserve their flexibility, and to enable them to resist any accidents which may be occasioned by the roughness or sharpness of particular grains.”

On the approach of winter the Hamster retires into his subterraneous abode, the entry of which he shuts up with great care ; and thus remaining

* Allamand's Buffon.

in a state of tranquillity, feeds on his collected provision till the frost becomes severe; at which period he falls into a profound slumber, which soon grows into a confirmed torpidity, so that the animal continues rolled up, with all its limbs inflexible, its body perfectly cold, and without the least appearance of life. In this state it may even be opened; when the heart is seen alternately contracting and dilating, but with a motion so slow as to be scarce perceptible, not exceeding fifteen pulsations in a minute, though in the waking state of the animal it beats a hundred and fifty pulsations in the same time. It is added, that the fat of the creature has the appearance of being coagulated, that its intestines do not exhibit the smallest symptoms of irritability on the application of the strongest stimulants, and the electric shock may be passed through it without effect. This lethargy of the Hamster has been generally ascribed to the effect of cold alone; but late observations have proved, that unless at a certain depth beneath the surface, so as to be beyond the access of the external air, the animal does not fall into its state of torpidity, and that the severest cold on the surface does not affect it. On the contrary, when dug up out of its burrow, and exposed to the air, it infallibly awakes in a few hours. The waking of the Hamster is a gradual operation: he first loses the rigidity of his limbs, then makes profound inspirations, at long intervals; after this he begins to move his limbs, opens his mouth, and utters a sort of un-

pleasant rattling sound. After continuing these operations for some time, he at length opens his eyes, and endeavours to rise, but reels about for some time, as if in a state of intoxication, till at length, after resting a small space, he perfectly recovers his usual powers. This transition from torpidity to activity requires more or less time, according to the temperature of the air, and other circumstances. When exposed to a cold air he is sometimes two hours in waking; but in a warmer air the change is effected in half the time.

The manners of the Hamster are generally represented as far from pleasing. No society appears to exist among these animals. They are naturally very fierce, and make a desperate defence when attacked; they also pursue and destroy every animal which they are capable of conquering, not excepting even the weaker individuals of their own species. They are said to be particularly fond of the seeds of liquorice, and to abound in the districts where that plant is cultivated. According to Mr. Sultzzer, they abound to such a degree in Gotha, that in one year 11,564, in another 54,429, and in a third 80,139 of their skins were delivered in the Hotel de Ville of that capital, where the Hamster is proscribed on account of the devastations it commits among the corn.

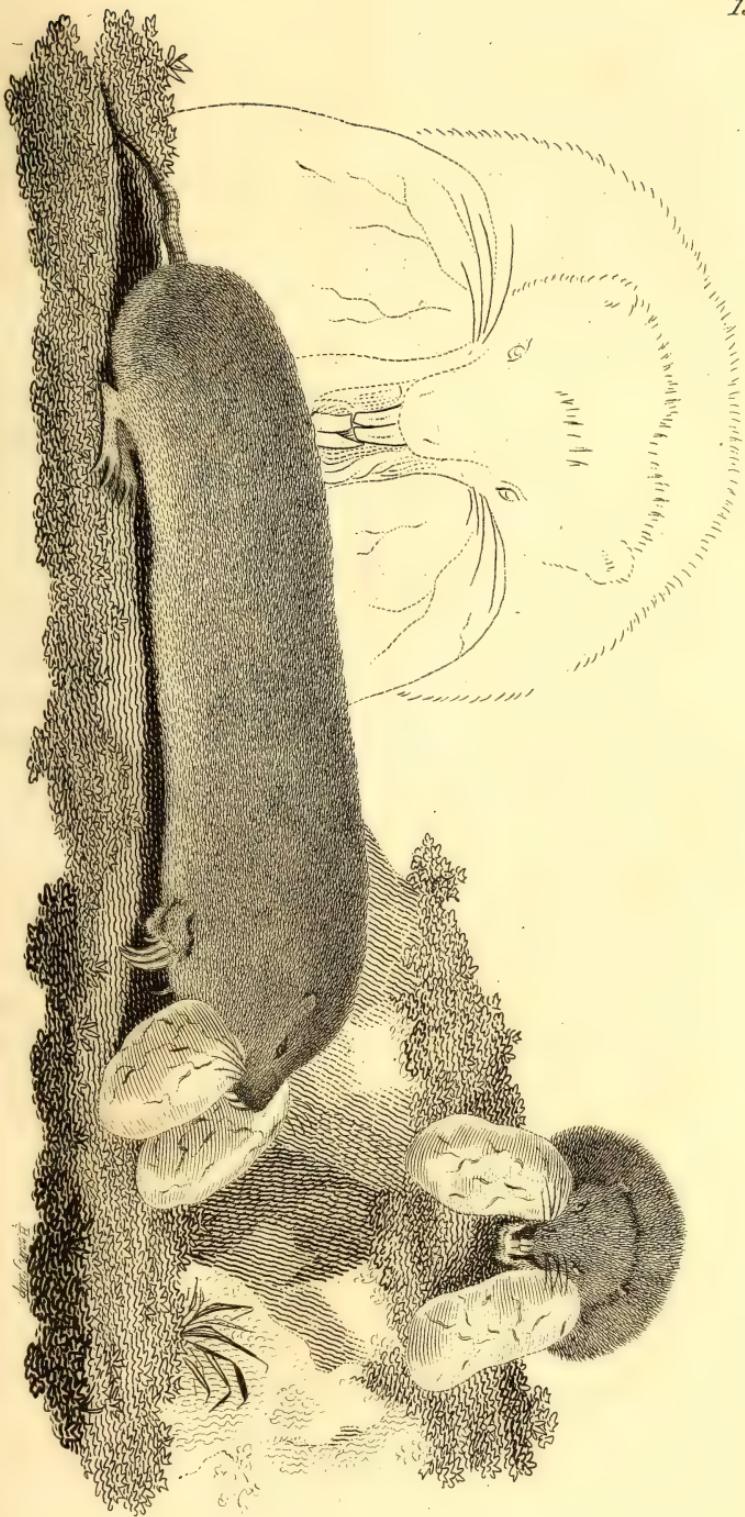
CANADA RAT.

Mus Bursarius. *M. cinereus, cauda tereti brevi subnuda, genis saccatis, unguibus palmarum maximis fossoriis.*

Ash-coloured Rat, with short nearly naked tail, pouched cheeks, and the claws of the fore-feet very large, and formed for burrowing in the ground.

Mus Bursarius. *Lin. Trans. vol. 5. p. 227. pl. 8.*

THIS, which is a species but lately discovered, seems to be the most remarkable of all the pouched rats for the proportional size of the receptacles. It is a native of Canada, and the individual here figured was taken by some Indians in the year 1798, and afterwards presented to the lady of Governor Prescot. It is about the size of a brown or Norway rat, and is of a pale greyish-brown colour, rather lighter beneath: the length to the tail is about nine inches, and that of the tail, which is but slightly covered with hair, about two inches: the legs are short; the fore-feet strong, and well adapted for burrowing in the ground, having five claws, of which the three middle ones are very large and long; the interior much smaller, and the exterior very small, with a large tubercle or elbow beneath it. The claws on the hind-feet are comparatively very small, but the two middle are larger than the rest, and the interior one is scarce visible: the teeth are extremely strong, particularly the lower pair, which are much longer than the upper: the ears are very small. This species is described in the 5th



CANADA RAT.

volume of the Transactions of the Linnæan Society, but I must observe, that, by some oversight in the conduct of the figure there given, the claws on the fore-feet are represented as only three in number, and are somewhat too long, weak, and curved. The engraving in the present plate is a more faithful representation, and is accompanied by an outline of the head, in its natural size, as viewed in front, in order to shew the teeth and cheek-pouches. The manners of this species are at present unknown; but it may be concluded that it lays in a stock of provisions, either for autumnal or winter food. The pouches of the individual specimen above described, when first brought to Governor Prescot, were filled with a kind of earthy substance: it is, therefore, not improbable that the Indians who caught the animal might have stuffed them thus, in order to preserve them in their utmost extent.

YAIK RAT.

Mus Accedula. *M. buccis sacciferis, auriculis sinuatis, corpore griseo subtus albido.* Lin. Syst. Nat. Gmel. p. 137. Pall. Glir. p. 257.

Yellowish-grey Rat, whitish beneath, with pouched cheeks and sinuated ears.

Yaik Rat. Pennant Quadr. 2. p. 210.

THIS species is a native of Siberia, and particularly of the deserts about the Yaik. It is much smaller than the Hamster, measuring only four

inches; and the tail about three quarters of an inch: the upper parts of the body are of a cinereous yellow mixed with brown, and the under parts whitish: the face also is whitish: the snout is blunt, the ears moderately large, the eyes full, and the body short and thick. On the fore-feet are four toes, and on the hind-feet five, all furnished with claws of moderate strength. This animal is said to make its excursions for food chiefly by night, confining itself during the greatest part of the day to its burrow.

SAND RAT.

Mus Arenarius. *M. buccis sacculiferis, corpore cinereo lateribus subtusque albo, cauda pedibusque albis.* Lin. Syst. Nat. Gmel. p. 139. Pall. Glir. p. 265.

Cinereous pouched Rat, with the feet, sides of the body, abdomen, and tail, white.

Sand Rat. Pennant Quadr. 2. p. 211.

THE Sand Rat is about four inches in length, with a tail about one inch or rather more: the head is longish and the snout sharp; the cheek-pouches large, the ears large and oval, and the eyes rather small: the colour of the upper part of the body is hoary or cinereous, and of the under pure white; the tail is also white. It is an inhabitant of the sandy plains of Baraba, near the Siberian river Irtish, where it forms deep burrows, at the bottom of which is a nest com-

posed of the sea lyme-grass and other plants. It is said to be chiefly a nocturnal animal, and of a fierce, untameable disposition.

ASTRACAN MOUSE.

Mus Phœus. *M. buccis sacculiferis, corpore caudaque fusco-cinerascensibus subtus albis.* Lin. Syst. Nat. Gmel. p. 138.

Ash-brown pouched Rat, white beneath.

Zarizyn Rat. Pennant Quadr. 2. p. 211.

THIS species measures about three inches and a half in length, exclusive of the tail, which is about three quarters of an inch long: the forehead is elevated; the edges of the eyelids black; the ears naked and oval; the colour of the animal on the upper parts is pale cinereous or hoary, with a dusky streak along the back: the sides are whitish; and the circumference of the mouth, under side of the body, and the extremities of the limbs, milk white. It is an inhabitant of the desert of Astracan, and particularly about Zarizyn, where it is occasionally taken in the winter season in places about stables and out-houses. Is is also found about the Persian villages in the Hyrcanian mountains, and seems to have been first distinctly described by Dr. Pallas.

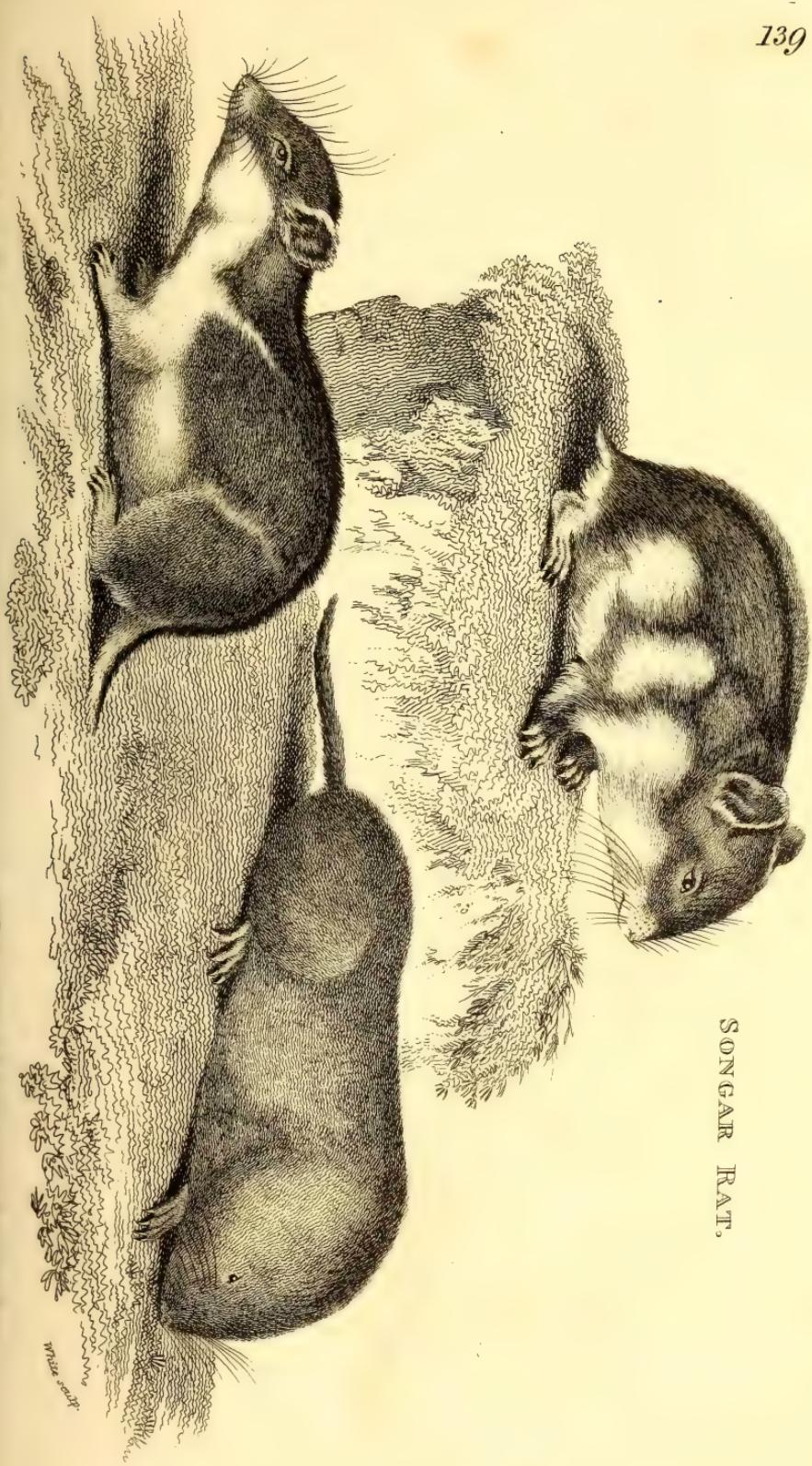
SONGAR RAT.

Mus Songarus. M. buccis sacculiferis, dorso cinereo, linea spinali nigra, lateribus albo fuscoque variis, ventre albo. Lin. Syst. Nat. Gmel. p. 138. Pall. Glir. p. 261.

Cinereous pouched Rat, white beneath, with black spinal line and the sides patched with white.

Songar Rat. *Pennant Quadr. 2. p. 212.*

THE Songar Rat is a native of Siberia, where, like others of this tribe, it forms its burrows in dry sandy places. Its length is about three inches, and its tail scarce more than a quarter of an inch. It is an animal of a thick shape, with a large head, blunt nose, small eyes, and large oval ears, which are but very slightly covered with hair. Its colour on the upper parts is pale grey, with a black dorsal line, and the sides marked with some large white spots or patches which are confluent in some parts, and in others bounded with brown : the under parts and legs are white. This elegant species appears to have been first discovered by Dr. Pallas, who observes, that it makes a nearer approach to the Hamster in its form, and in the disposition of its colours, than the rest of this tribe : Dr. Pallas, in one of the nests, which was formed of dried herbs, found seven young, which were still blind : these he preserved, and they soon grew perfectly tame, and would feed from his hand, lap milk, and, when placed on a table, shewed no desire to escape : they were kept in a box, with sand, in which they delighted to burrow. They frequently eat in a sitting posture,



BARABA RAT.

SONGAR RAT.

MUS GLAREOLUS. SCHREB.

like a squirrel; and washed their faces with their paws: they generally wandered about during the day, and slept all night rolled up: their voice resembled that of a bat.

BARABA RAT.

Mus Furunculus. *M. buccis sacculiferis, corpore supra griseo, striga dorsali nigra, subtus albido.* Lin. Syst. Nat. Gmel. p. 139. Pall. p. 273.

Yellowish-grey pouched Rat, whitish beneath, with black dorsal streak.

Baraba Rat. Pennant Quadr. 2. p. 213.

THIS species, which inhabits the sandy plain of Baraba, towards the river Ob, is about the same length with the preceding, but the tail is much longer, measuring near an inch: the snout is of a sharper form, and the body more slender. It is of a yellowish grey colour above, and white beneath: along the back, from the neck almost to the tail, runs a black stripe. Nothing particular is known of its way of life, the specimens from which Dr. Pallas drew up his description, having been taken running about the plain, and their skins brought to him in a dried state.

*Subterranean or Ground-Rats, resembling Moles
in Habit and Manner of Life.*

COAST RAT.

Mus Maritimus. *M. brachyurus, dentibus primoribus superioribus sulcatis, auriculis nullis, pedibus pentadactylis, corpore supra albido flavescente mixto, ad latera et subtus ex albo cinereo.*
Lin. Syst. Nat. Gmel. p. 140.

Pale yellowish-brown Rat, whitish beneath, with very large and long naked teeth, pentadactyle feet, no external ears, and short tail.

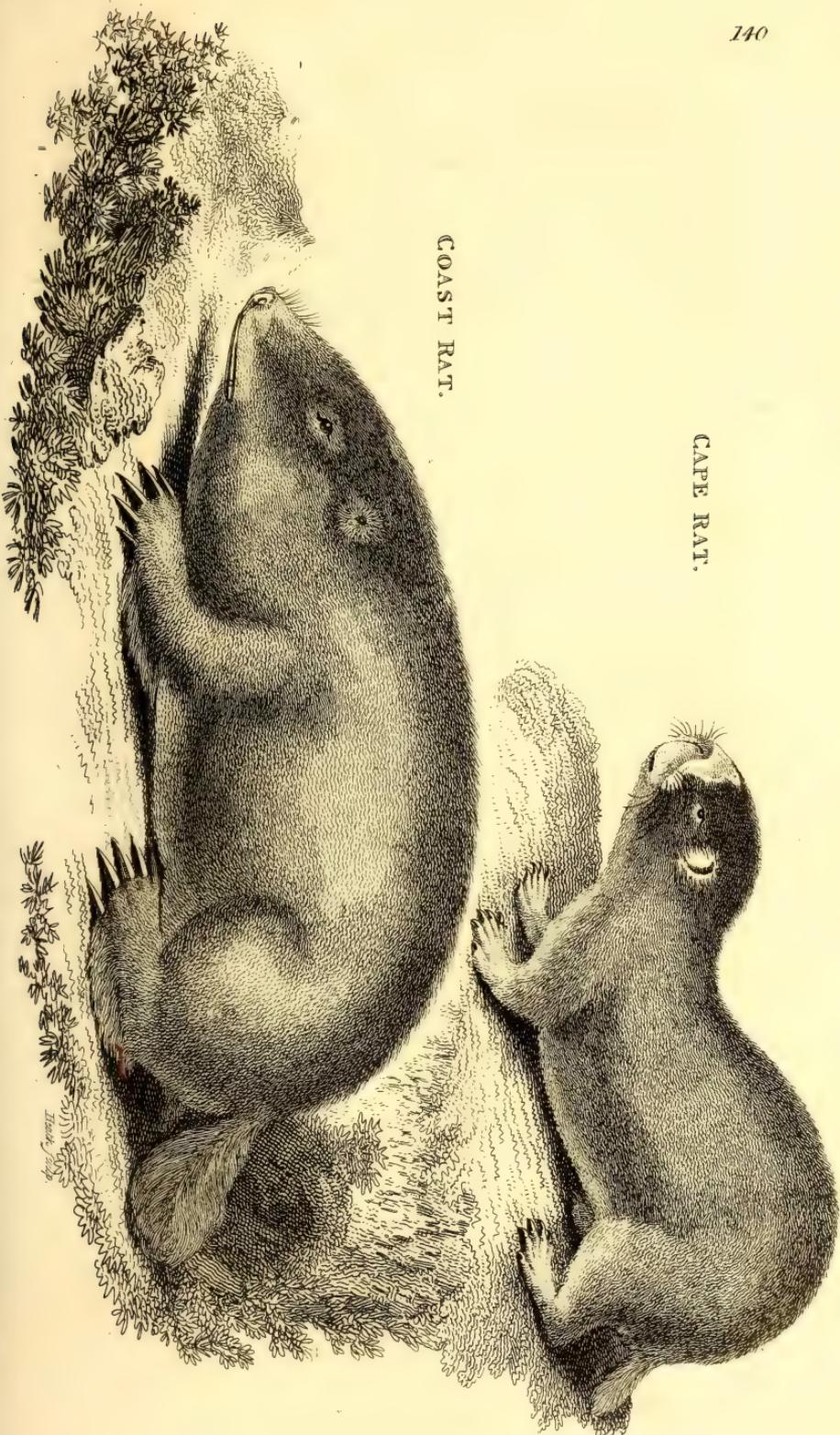
La Grande Taupe du Cap. *Buff. suppl. 6. p. 255. pl. 38.*

African Rat. *Pennant Quadr. 2. p. 217.*

OF all the subterraneous species this is the largest yet discovered, being of the size of a rabbit, and measuring a foot from nose to tail, which is about two inches long, flattish, and covered with long bristly hair horizontally disposed on each side. The colour of the animal is a cinereous brown, paler beneath: the head is large, the nose black, the end somewhat flattened and wrinkled: the eyes very small and hid in the fur: there is no appearance of external ears, the foramina alone being discoverable: the front-teeth are very large; the upper pair are the third of an inch long, and are furrowed lengthways; the lower pair are an inch and quarter long, and naked, or naturally exposed to view, the lip not closing over them: these lower teeth it has the power of separating or divaricating at pleasure, in the manner of the Kanguroo: on the fore-feet

COAST RAT.

CAPE RAT.



are five toes, of which the interior is the longest; the claws very long and sharp; that on the thumb being shorter than the rest: the hind-feet, which are very long, large, and naked, have also five toes, with much shorter and weaker claws than those of the fore-feet: the hair on the sides of the feet is very strong and bristly. This large species is a native of the Cape of Good Hope, and is there known by the name of the Sand Mole, being chiefly found in the neighbourhood of the shores, and never in the interior parts of the country. It renders the ground, in the places it frequents, so hollow, by flinging up the earth in forming its burrows, as to be highly inconvenient to travellers; breaking every six or seven minutes under the horses' feet, and letting them in up to the shoulders. It is supposed to feed principally on the bulbous *Ixiæ* and *Antholyzæ*. From the frequency of this species about the Cape, it is supposed to be an animal of a prolific nature.

BLIND RAT.

Mus Typhlus. *M. ecaudatus, palmis pentadactylis, incisoribus supra infraque latis, oculis auriculisque nullis.* Lin. Syst. Nat. Gmel. p. 141. Pall. Glir. p. 76.

Short-tailed rufous-brown Rat, dusky beneath, with pentadactyle fore-feet, broad front-teeth, and without eyes or external ears.

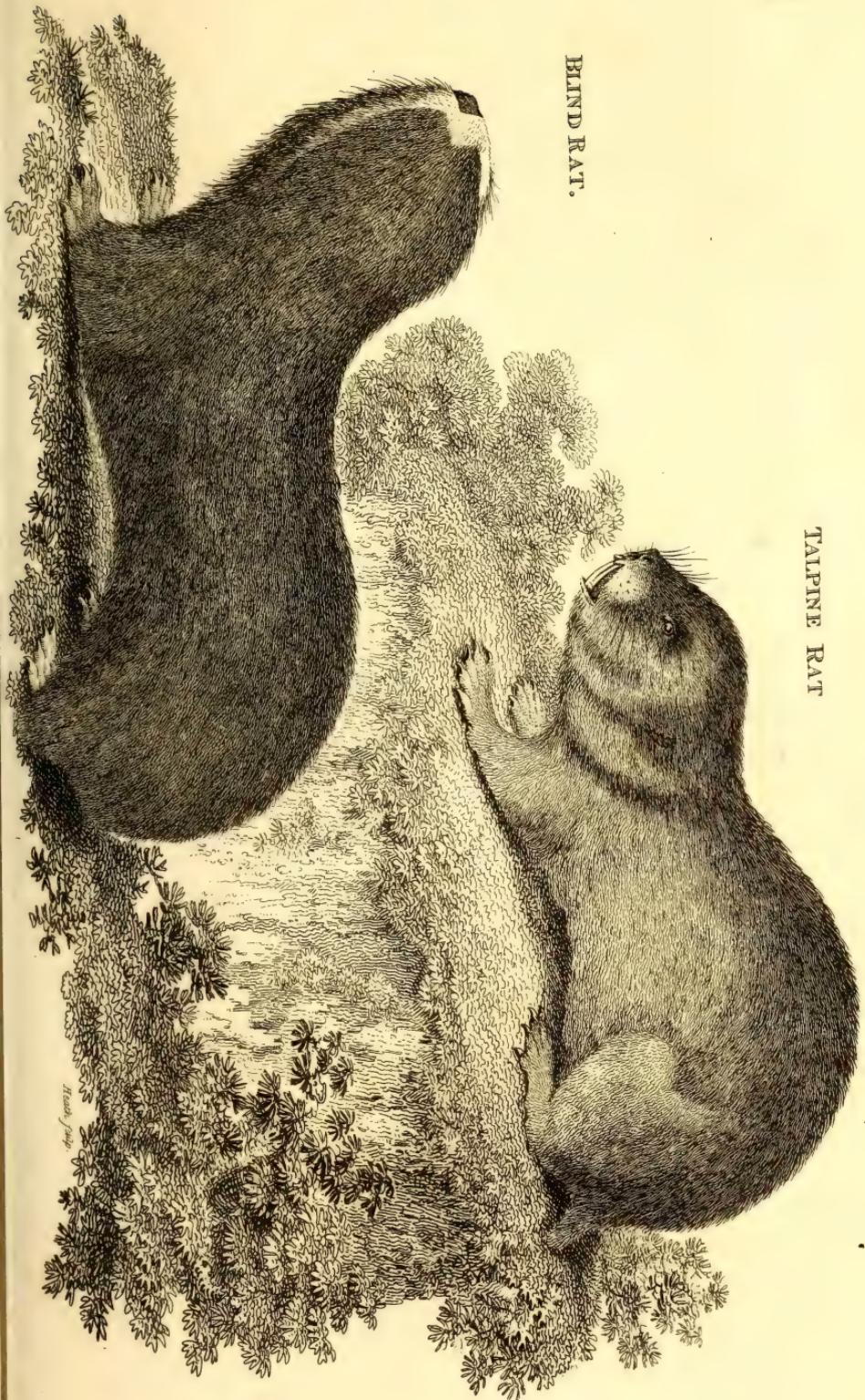
Spalax major. Erxl. mamm. p. 337.

Blind Rat. Pennant Quadr. 2. p. 214.

NEXT to the sand rat, above described, this is perhaps the largest and most remarkable of its tribe; measuring between seven and eight inches in length, and being entirely destitute both of eyes and tail: the defect of the former is a very singular circumstance, and the animal perhaps affords the only instance of a truly blind or eyeless quadruped. In the mole, the eyes, however small and deeply seated, are yet perfect in their kind, and though not calculated for acute vision, still enable the animal to avoid the danger of exposure; but in the quadruped now under consideration, there are merely a pair of subcutaneous rudiments of eyes, smaller than poppy-seeds, and covered with a real skin. It is probable, however, that even these minute organs are sufficient to give an obscure perception of light, and to enable the animal to consult its safety by generally continuing beneath the surface. The external ears are also wanting, and the foramina leading to the internal organs are very small, entirely hid by the fur, and situated at a great distance

BLIND RAT.

TALPINE RAT



backward. There is scarce any distinction between the head and neck, and the whole form of the animal, like that of the mole, is calculated for a subterraneous life; the body being cylindric, the limbs very short, and the feet and claws, though small and weak in comparison with those of moles, yet calculated for digging or burrowing in the ground. The colour of the animal is a greyish brown; the fur, which is very thick, soft, and downy, being dusky toward the roots, and greyish toward the tips: the head is lighter, and the abdomen darker than the other parts: the lower lip is also whitish, and sometimes a white mark extends along the forehead: the front-teeth are very large, and are naturally bare or exserted: the lower pair being much longer than the upper. This singular species is a native of the southern parts of Russia, where it burrows to a great extent beneath the surface, forming several lateral passages, by which it may pass in quest of roots, &c. It is said to feed in particular on the roots of the *Chærophylloides bulbosum*. In the morning hours it sometimes quits its hole to bask in the sunshine, and if disturbed, instantly takes refuge beneath the surface; burrowing with great agility, and frequently in a perpendicular direction. Its bite is very severe when attacked. It has no voice, but emits a kind of snorting sound, and gnashes its large teeth in a menacing manner, raising its head at the same time. The female is said to produce from two to four young.

DAURIAN RAT.

Mus Aspalax. *M. brachyurus, incisoribus supra infraque cuneatis, auriculis nullis, unguibus palmarum elongatis.* Lin. Syst.

Nat. Gmel. p. 140. Pall. Glir. p. 165.

Short-tailed, earless, yellowish-cinereous Rat, with large cuneated front-teeth, and long claws on the fore-feet.

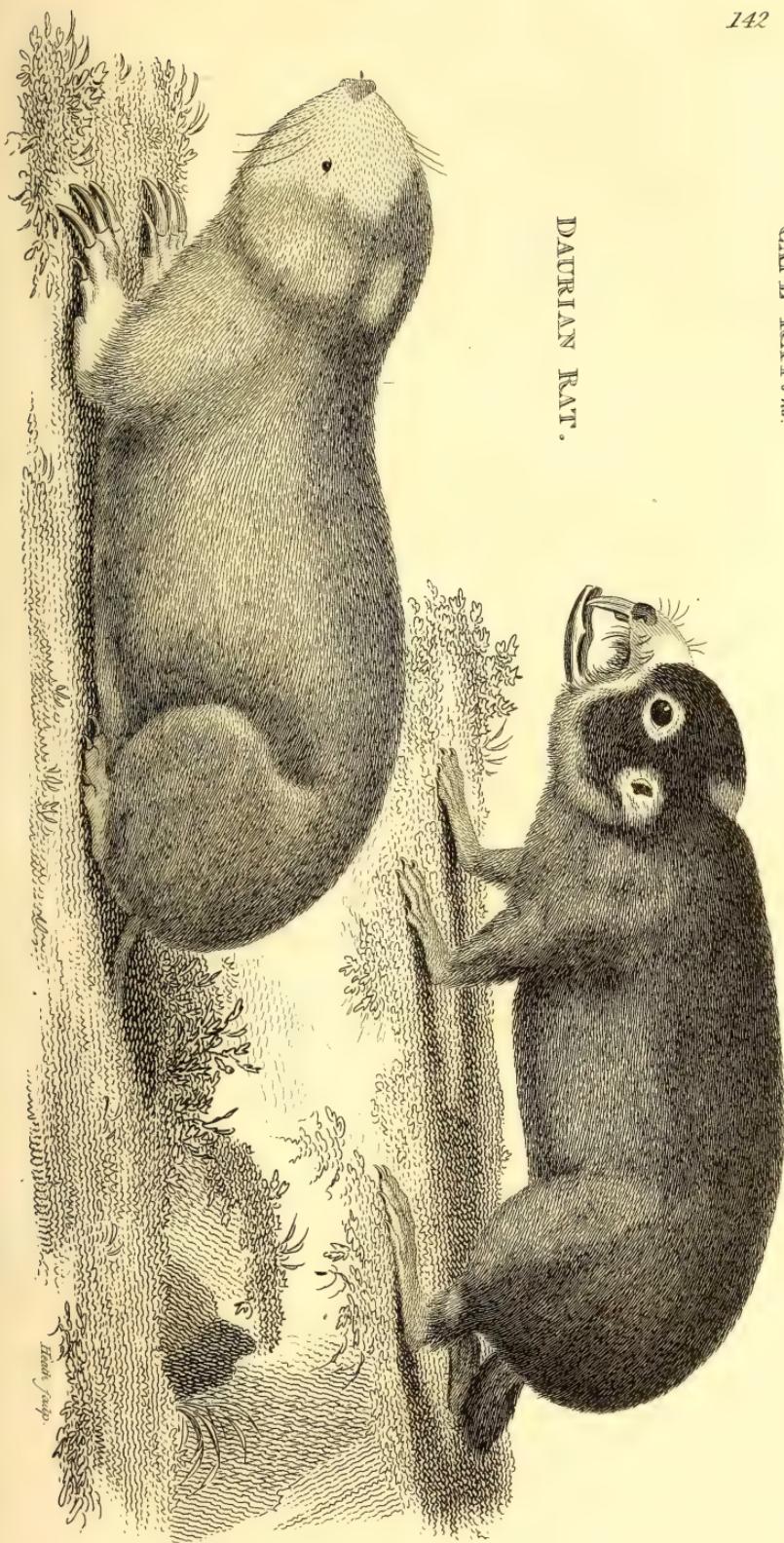
Daurian Rat. *Pennant Quadr. 2. p. 216.*

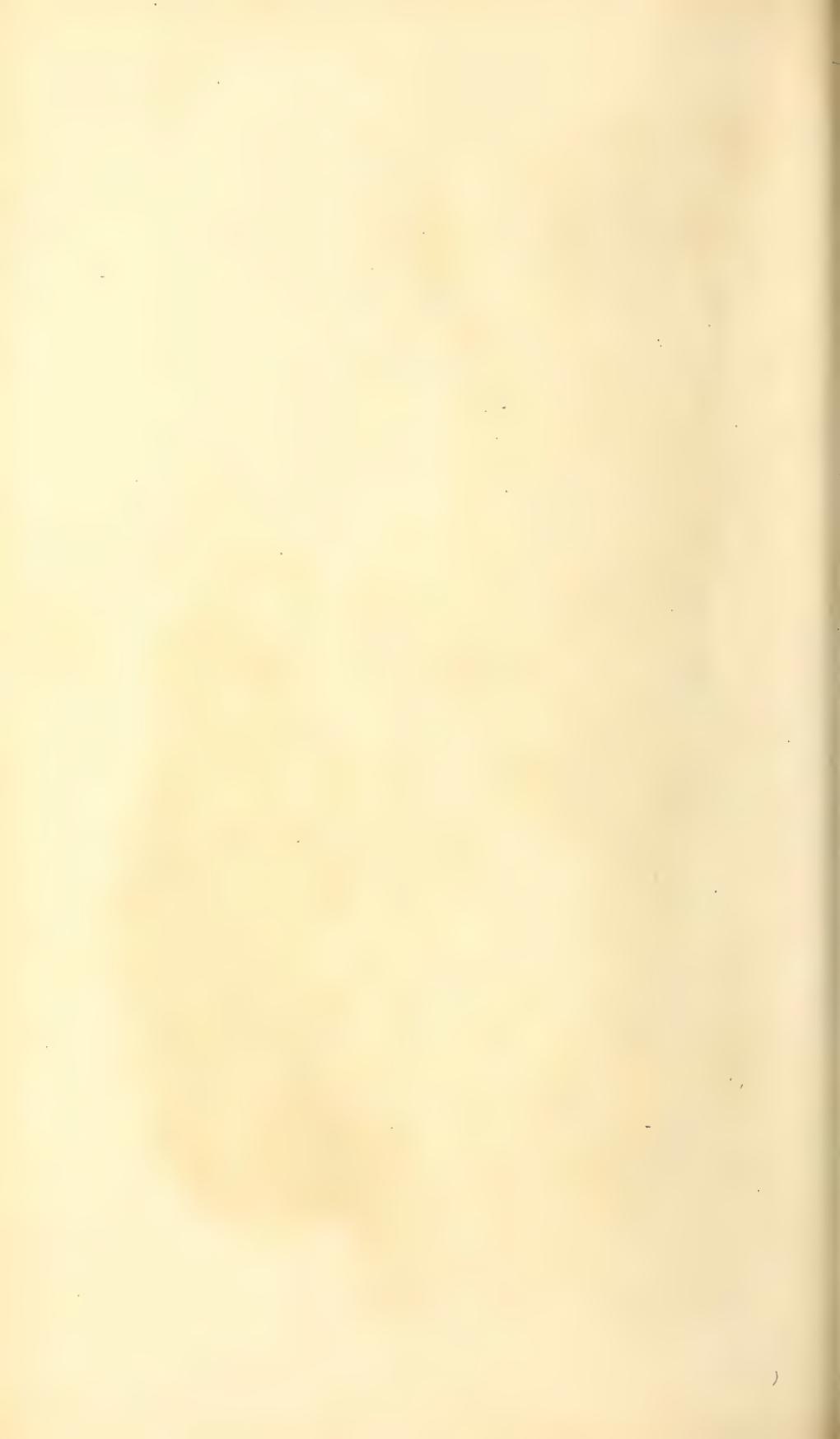
THIS species in form and manner of life agrees with the *Mus Typhlus* or Blind Rat, but is, in general, of smaller size, and of a yellowish ash-colour; and in some specimens a whitish line or longitudinal streak appears on the top of the head: the upper fore-teeth are naked, but the lower are covered with a moveable lip: there is no appearance of external ears, and the eyes are extremely small and deeply seated: the head is flat and blunt, the body short and somewhat depressed, the limbs very strong, especially the fore-legs, the feet of which are large, naked, and well adapted for burrowing in the ground, having five toes, the three middle of which are furnished with long and strong slightly-curved claws: the hind-feet are also naked, and have five toes with small claws: the tail is very short.

This animal burrows, like the rest of this division, raising numerous hillocks in its progress. It is a native of the Altaic mountains, and of the country beyond Lake Baikal. It differs considerably in size in different regions; those of the Altaic mountains sometimes measuring near nine inches in length.

CAPE RAT.
var.

DAURIAN RAT.





CAPE RAT.

Mus Capensis. M. brachyurus, dentibus primoribus supra infraque cuneatis, auriculis nullis, palmis pentadactylis, ore albo.
Lin. Syst. Nat. Gmel. p. 140. Pall. Glir. p. 172.

Short-tailed rufous-cinereous Rat, paler beneath, with very large naked front-teeth, pentadactyle feet, and white muzzle.

Taupe du Cap de bonne Esperance. *Buff. Suppl. 3. p. 193. pl. 33. and Suppl. 6. p. 251. pl. 36.*

Cape Rat. *Pennant Quadr. 2. p. 218.*

In its general shape this animal is not unlike the great sand rat first described, and is equally common about the Cape of Good Hope, but it is far inferior in size, measuring about seven inches to the tail, which is very short, nearly white, and flattish. The general colour of this species is a dusky rufous ash-brown, paler or more inclining to whitish beneath : the end or tip of the nose is naked and black ; the remainder white, and on each side are several strong white bristles : the chin, lower sides of the cheeks, and spaces round the eyes, are also white, and on the hind part of the head is an oval white spot ; the teeth are naturally exserted or naked, and are similar in form to those of the great sand rat. In its manners and way of life the animal is also similar to that species, and is very destructive to gardens, flinging up hillocks, and eating various kinds of roots. The best figure of this animal seems to be that in Mr. Brown's Illustrations of Zoology, for which reason it is introduced into the present work.

Dr. Pallas's representation is also added, though less expressive of the remarkable appearance of the teeth.

TALPINE RAT.

Mus Talpinus. M. brachyurus fuscus, dentibus primoribus supra infraque cuneatis, auriculis nullis, palmis pentadactylis fossoriis.
Lin. Syst. Nat. Gmel. p. 139. Pall. Glir. p. 176.

Short-tailed brown Rat, with large cuneated front-teeth, no external ears, and pentadactyle fore-feet, formed for burrowing.

Spalax minor. Erxleb. mamm. p. 379.

Talpine Rat. *Pennant Quadr. 2. p. 219.*

THIS species is much allied to the *Mus Capensis* in shape and in its large teeth, but is of a smaller size, measuring scarcely four inches in length. Its colour is subferruginous brown above, paler or more inclining to whitish beneath: the tail is very short: the body plump; the head rather large, and the snout thick: the eyes small, and the foramina of the ears scarcely visible: the legs short; the feet naked, with five toes on each, furnished with moderately strong claws. This species is common in the temperate parts of Russia, and in some parts of Siberia, burrowing in black turf ground, and especially in places where the *Phlomis tuberosa* and *Lathyrus esculentus* grow. In the winter it makes a nest beneath some shrub or hay-rick, at a considerable depth below the ground, lining it with soft grass,

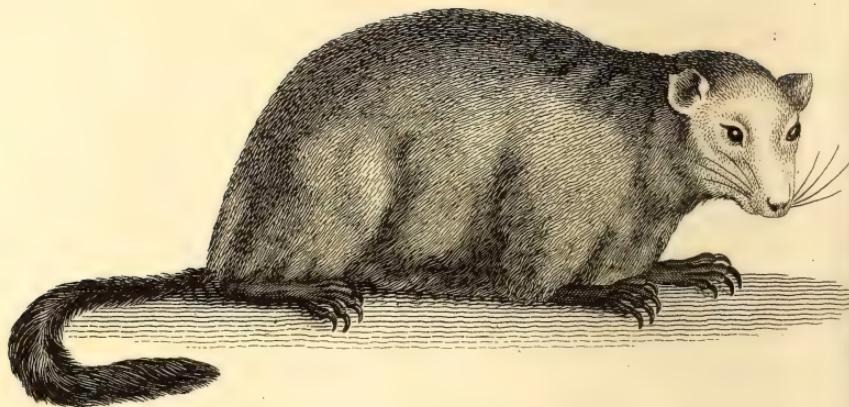
but is not observed to become torpid. The female is said to produce three or four young. This animal sometimes varies in colour, and has been found totally black. It was first distinctly described by Dr. Pallas.

ARCTOMYS. MARMOT.

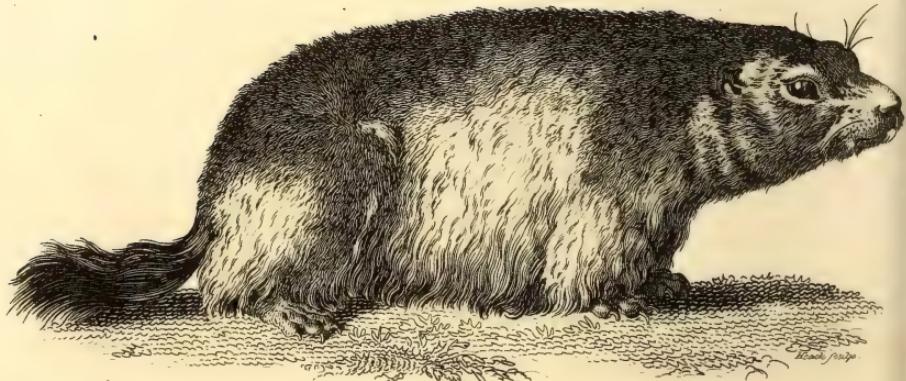
Generic Character.

<i>Dentes Primores cuneati, duo in utraque maxilla.</i>	<i>Front-teeth</i> two in each jaw, strong, sharp, and cuneated.
<i>Molares superiores utrinque quinque, inferiores quatuor.</i>	<i>Grinders</i> in the upper jaw five on each side, in the lower jaw four.
<i>Claviculae perfectæ.</i>	<i>Clavicles</i> or collar-bones in the skeleton.

THE genus *Arctomys* or *Marmot* differs from that of *Mus* in so few particulars as to make it somewhat doubtful whether it ought to be kept separate or not. These animals are of a thick form, with large, roundish, and somewhat flattened heads, small mouths, the fissure having a somewhat perpendicular appearance; ears very short, and sometimes none; a short villous tail; tetradactyle fore-feet with a very small thumb, and pentadactyle hind-feet: the skeleton is furnished with clavicles or collar-bones; and the cæcum or appendicular intestine is very large. They are diurnal animals; feed on roots, grain, &c. which they often collect into heaps. They reside in subterraneous holes or burrows, and sleep during the winter.



MARYLAND MARMOT.



ALPINE MARMOT.

ALPINE MARMOT.

Arctomys Marmota. A. capite auriculato, corpore fusco subtus rufescente. Lin. Syst. Nat. Gmel. p. 141.

Brown Marmot, rufous beneath.

Mus Marmota. M. cauda abbreviata subpilosa, auriculis rotundatis, buccis gibbis. Lin. Syst. Nat. p. 81.

Mus Alpinus. Gesn. Quadr. p. 743. Aldr. dig. p. 445.

La Marmotte. Buff. 8. p. 219. pl. 28.

Alpine Marmot. Pennant Quadr. 2. p. 128.

THIS species is a native of the Alps and of the Pyrenean mountains, and is most frequent in those of Savoy and Switzerland, inhabiting the higher regions, and feeding on various roots, plants, insects, &c. It climbs readily, and can ascend the rocky eminences and fissures with great facility. Its general size is somewhat larger than that of a rabbit; measuring about sixteen inches to the tail, which is about six inches long. The colour of the Marmot, on the upper parts, is a brownish or rather tawny ash-colour; the legs and under parts being of a bright tawny or ferruginous tinge: the head is rather large, and flattish; the ears short and hid in the fur, and the tail thick and bushy. The account of this species, as given by Gesner, and copied by Buffon and others, with the addition of a few particulars, will be sufficient for its general history. It is an animal which delights in the regions of frost and snow, and is found only on the tops of high mountains. In such situations several individuals unite in forming a place of retreat, which

is contrived with great art, and consists of an oval cavity or general receptacle, large enough to contain several of the animals, and having a large canal or passage, which divaricates in such a manner as to present two outlets to the surface of the ground. These recesses are prepared on the declivities of elevated spots, and the cavern or receptacle is well lined with moss and hay, which they prepare during summer, as if conscious of the necessity of providing for their long hybernal sleep. In fine weather they are seen sporting about the neighbourhood of their burrows; and delight in basking in the sunshine; frequently assuming an upright posture, sitting on their hind-feet. When assembled in this manner, it is observed, that one of the exterior number seems to act as a sentinel, and on the approach of any danger, alarms the fraternity by a loud and shrill whistle, on which they instantly retire to their cavern. These animals make no provision for winter; but as soon as the autumnal frosts commence, they carefully stop up the entrances to their mansions, and gradually fall into a state of torpidity, in which they continue till the arrival of spring, when they again awake, and re-commence their excursions. Before they retire to their winter quarters they are observed to grow excessively fat; and, on the contrary, appear greatly emaciated on first emerging from them. If carefully dug up during the winter, from their holes, they may be conveyed away in their sleeping state; and when brought into a warm cham-

ber, gradually awaken, nearly in the same manner as the Hamster. If kept in a warm situation, they do not become torpid in winter. They breed early in the summer, and the litter commonly consists of three or four, the growth of which is observed to be very rapid.

When taken young, the Marmot may be easily rendered domestic, and is often taught to perform various gesticulations. In a domestic state it will also eat almost any kind of animal or vegetable food, and is extremely fond of milk. In feeding it generally sits in an upright position, making use of its paws in the manner of a squirrel.

MARYLAND MARMOT.

Arctomys Monax. *A. capite auriculato, rostro cærulescente, cauda longiuscula villosa, corpore griseo.* *Lin. Syst. Nat. Gmel. p. 142.*

Ferruginous-brown Marmot, with blueish-grey snout and longish villose tail.

Mus Monax. *M. cauda mediocri pilosa, corpore cinereo, auriculis subrotundis, palmis tetradactylis, plantis pentadactylis.* *Lin. Syst. Nat. p. 81.*

The Monax, or Marmot of America. *Edw. 104. Buff. suppl. 3. p. 157. pl. 28.*

Maryland Marmot. *Pennant Quadr. 2. p. 130.*

THE Maryland Marmot is a North American animal, and is principally found in Virginia and Pennsylvania. It also occurs in the Bahama islands; and in its way of life resembles the European or Alpine Marmot, living on vegetable substances,

retiring into hollows under the roots of trees, &c. in winter, and falling into temporary state of torpidity: it is doubtful, however, whether this is the case in those which are found in the Bahama islands. The size of this species is nearly that of the rabbit: its colour is a ferruginous brown above, and paler or inclining to whitish beneath: the muzzle, as far as the eyes, is of a pale blueish ash-colour; the ears are short and rounded; the eyes are rather large and black, and the snout sharpish: the tail is longer than in others of this genus, being nearly half the length of the body, and covered with longish or rather bushy hair of a deep brown or blackish colour: the feet are blackish, and are furnished with large and sharp claws. A good figure of this animal has been given by Edwards, from a specimen which was long kept in a domestic state by Sir Hans Sloane. Edwards informs us, that "by being fed with soft meats, and disuse to gnaw, its teeth grew so long and crooked that it could not take its food, so to preserve its life they were obliged to break them out." This elongation of the teeth in various animals, when kept in similar circumstances, is a well-known occurrence, having been observed in rabbits, squirrels, &c.

QUEBEC MARMOT.

Arctomys Empetra. *A. capite auriculato, cauda villosa, corpore supra vario subtus rufo.* Lin. Syst. Nat. Gmel. p. 143.

Grey Marmot, undulated with darker and lighter variegations, rufous beneath, with dusky tail.

Mus Empetra. *M. capite gibbo auriculato, cauda villosa brevi, palmis tetradactylis, corpore supra vario, subtus rufo.* Pall. Glir. p. 75.

Quebec Marmot. Pennant Quadr. 2. p. 129.

THE Quebec Marmot is said to be found in various parts of North America, but it appears to be most frequent in Hudson's Bay and Canada. Its size is that of a rabbet, or rather larger, and its colour is brown on the upper parts, undulated with whitish or pale grey, the tips of the hairs being of that colour: the legs and under parts of the body are rufous or ferruginous: the face is dusky; the nose black and obtuse, the cheeks grey, and the tail short and dusky, especially at the tip. In its manners it is supposed to resemble the rest of its congeners.

BOBAC.

Arctomys Bobac. *A. capite auriculato, cauda villosa, palmarum ungue pollicari, corpore griseo subtus luteo.* Lin. Syst. Nat. Gmel. p. 143.

Grey Marmot, rufous beneath, with a thumb-claw on the fore-feet.

Mus Arctomys. Pall. Glir. p. 75. t. 18.

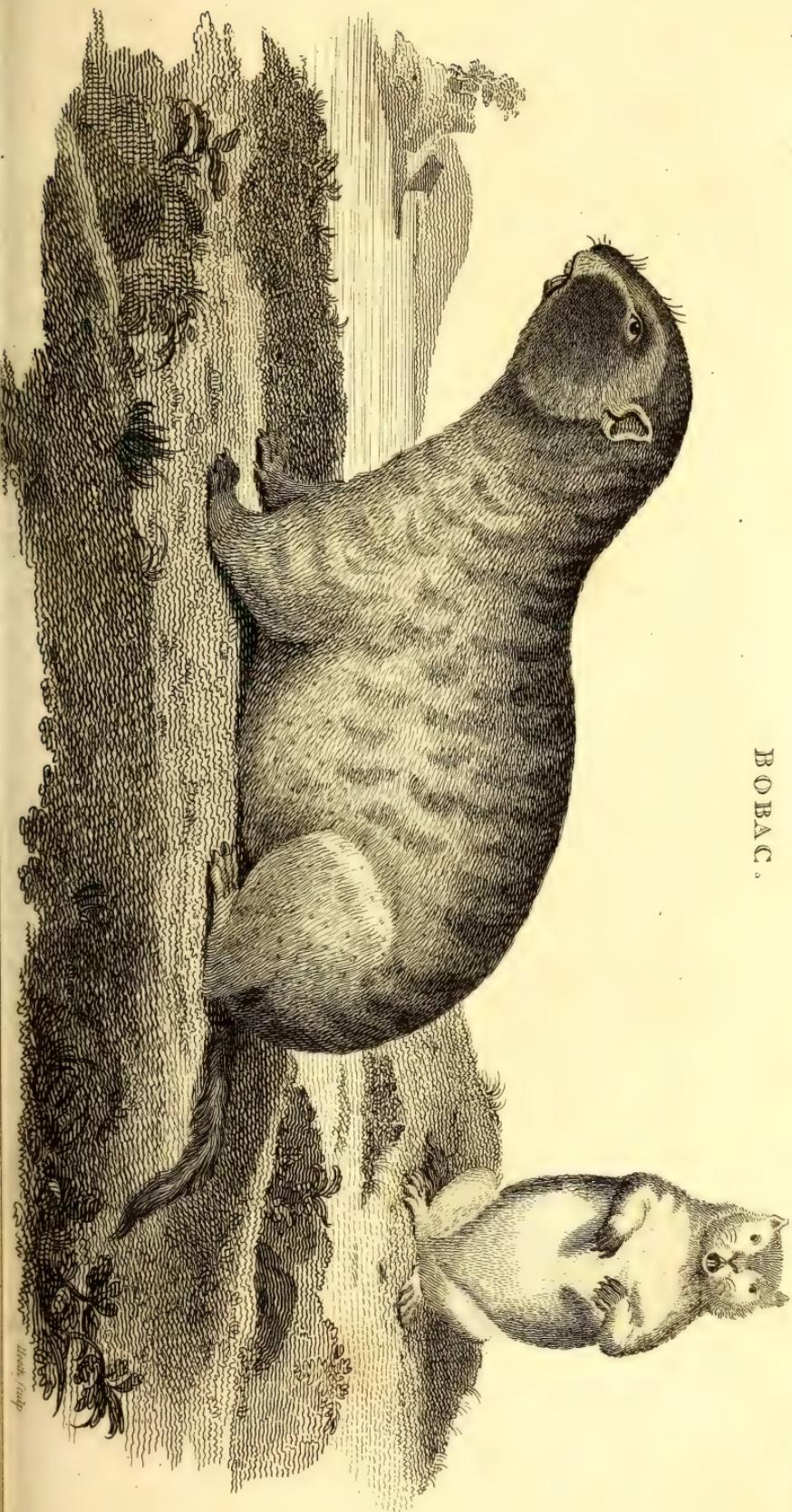
Le Boback. Buff. 13. p. 136. pl. 18.

Bobak Marmot. Pennant Quadr. 2. p. 131.

THE Bobac is of the size of the Alpine Marmot, and, according to Dr Pallas, is a native of “the high, but milder and sunny sides of mountainous countries, which abound with fissile or free-stone rocks, where it is found in dry situations, and such as are full of springs, woods, or sand. It abounds in Poland and Russia, among the Carpathian hills: it swarms in the Ukraine, about the Boristhenes, especially between the Sula and Supoy; and again between the Boristhenes and the Don, and along the range of hills which extend to the Volga. It is found about the Yaik and the neighbouring rivers: inhabits the southern desert in great Tartary, and the Altaic mountains, east of the Irtis. It ceases to appear in Siberia, on account of its northern situation, but is found again beyond lake Baikal, and about the river Argun and lake Dalay; in the sunny mountains about the Lena; and very frequently in Kamtschatka, but rarely reaches as high as lat. 55.”

The colour of the Bobac is grey above, with the throat, insides of the limbs, and under parts

B O B A C.



of the body, fulvous or ferruginous; the tail is short, rather slender, and full of hair. Its manner of life extremely resembles that of the common or Alpine Marmot, with which, indeed, it appears to have been sometimes confounded by naturalists. The holes or receptacles of these animals are lined with the finest hay, and it is said that the quantity found in one nest is sufficient for a night's provender for a horse. They are fond of sporting about in the sunshine near their holes, like the common Marmot, set up a similar whistle when disturbed, and retire with precipitation to their receptacle. They may be easily rendered domestic, like that species, and are of a mild and gentle disposition. In winter they lie torpid, unless kept in warm rooms. They breed early in the spring, and are said to produce six or eight young.

HOARY MARMOT.

Arctomys Pruinosa. *A. capite auriculato, cauda pedibusque nigris, dorsi, laterum et abdominis pilis duris longis, basi cinereis, medio nigris, apice albidis.* Lin. Syst. Nat. Gmel. p. 144.

Hoary Marmot, with black legs and tail.

Hoary Marmot. Pennant Quadr. 2. p. 144.

THIS species was first described by Mr. Pennant, from a specimen in the Leverian Museum. It is about the size of the *Monax*, or Maryland Marmot, and is of a hoary ash-colour, the hair, which is long and rather coarse, being cinereous

at the roots, black in the middle, and white at the tips: the tip of the nose, legs, and tail, are black: the cheeks whitish, and the top of the head dusky with a ferruginous cast. It is a native of North America.

MAULINE MARMOT.

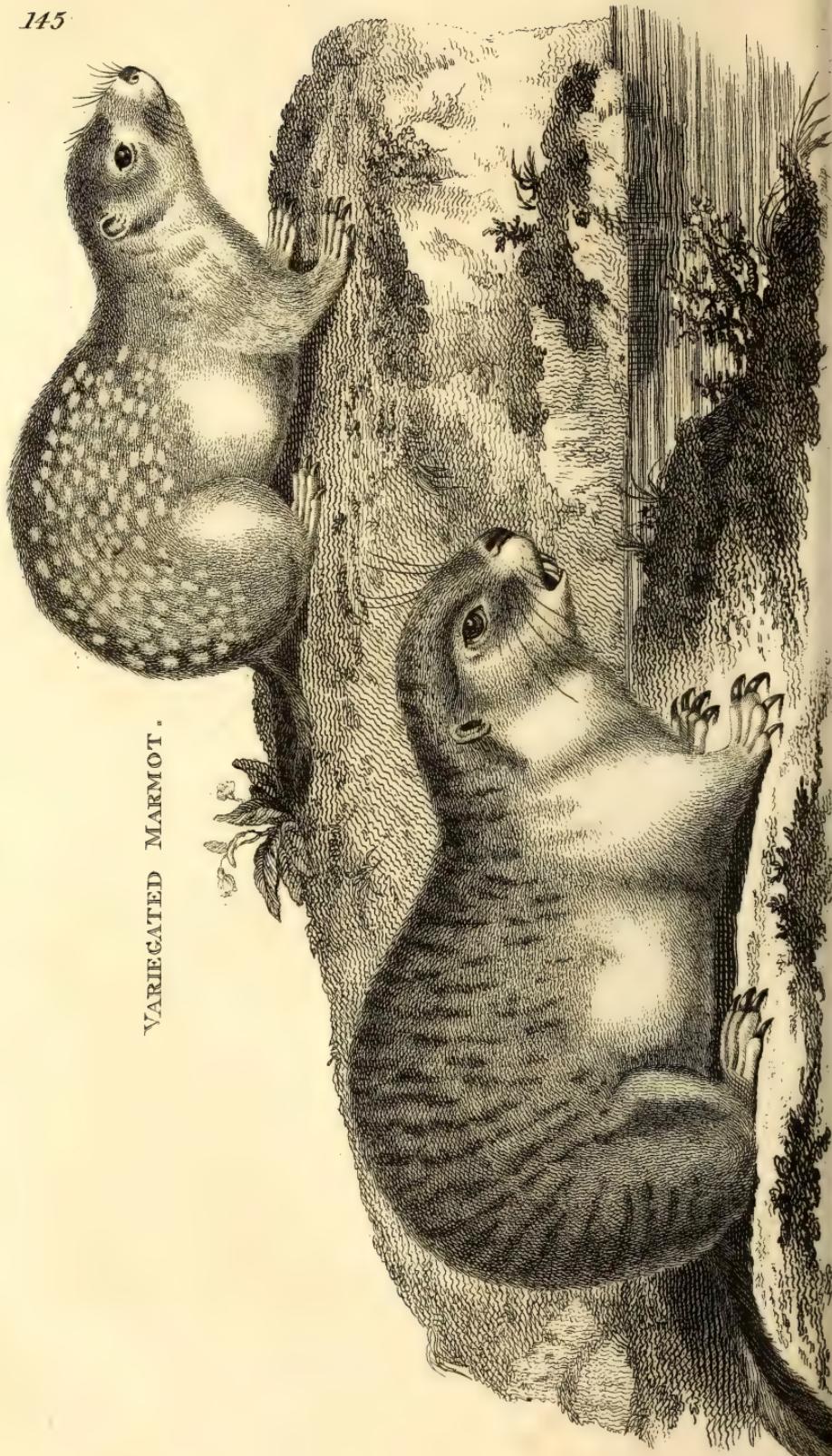
Arctomys Maulina. *A. cauda mediocri pilosa, auriculis acuminatis, pedibus pentadactylis.*

Marmot, with tail of middling length, sharp-pointed ears, and pentadactyle feet.

Mus Maulinus. *Lin. Syst. Nat. Gmel. p. 137. Molin. Hist. Chil. p. 268.*

Mauline Marmot. *Pennant Quadr. 2. p. 135.*

THIS animal was discovered by Molina in the province of Maule, in Chili, where it inhabits woods. It is said to be about twice the size of the common or Alpine Marmot, nearly of the same colour, but has pointed ears, lengthened nose, four rows of whiskers, and a longer tail than the common Marmot. On each foot are also said to be five toes. It is represented as a strong animal, and not easily conquered by dogs which happen to attack it.



VARIEGATED MARMOT.

GUNDI MARMOT.

Arctomys Gundii. *A. capite auriculato, corpore testaceo rufescente.* Lin. Syst. Nat. Gmel. p. 145.

Reddish Marmot, with abruptly terminated ears.

Gundi Marmot. Pennant Quadr. 2. p. 145.

THIS species is a native of Barbary, towards Mount Atlas, near Masuffin, and was first described by a Mr. Rothman, a Swede. It is about the size of a small rabbit, and is entirely of a testaceous red colour: the ears are truncated, with large apertures; the tail short, the upper teeth truncated, and the lower slender and pointed. It is called by the Arabs *Gundi*. Its particular history seems as yet to be not fully understood.

VARIEGATED MARMOT.

Arctomys Citillus. *A. auriculis nullis, cauda villosa, corpore vario.* Lin. Syst. Nat. Gmel. p. 144. Schreb. saeugth. 4. p. 746. t. 211. A. B.

Mus Citillus. *M. capite gibbo, auriculis nullis, cauda brevi villosa, corpore vario.* Pall. Glir. p. 76. and p. 119.

Variegated earless Marmot, with villous tail.

Le Zizel. Buff. 15. p. 139. and Le Souslik. p. 144. and Suppl. 3. p. 191. pl. 31.

Earless Marmot. Pennant Quadr. 2. p. 145

OF all the Marmots this is the most elegant in its appearance, exhibiting generally a beautiful

variegation of yellowish-brown and white, the former constituting the ground colour, and the latter the variegations, which are sometimes in the form of spots, and sometimes of transverse undulations : the legs and under parts of the body are of a yellowish white : the tail is short, but well covered with hair, and is brown above and ferruginous beneath : there is scarce any appearance of external ears, but merely an edging to the auditory canal. The length of the animal is about a foot, and of the tail four inches and a half ; but this species varies as much in size as in colours, and we are assured by Dr. Pallas, that some of the varieties are scarce larger than a water rat, while others are nearly equal in size to the Alpine Marmot.

The Variegated Marmot inhabits Bohemia, Austria, Hungary, and from the banks of the Volga to India and Persia ; through Siberia and Great Tartary, to Kamtschatka ; some of the intervening isles, and even the continent of America. It is sometimes found in woods, but seems principally to delight in dry hilly places, where the herbage is of short growth. They form subterraneous burrows, in which they deposit heaps of grain, roots, nuts, &c. for their winter food ; for it does not appear that they sleep during that period, like some others of this genus : at least we are assured by Dr. Pallas, that those which occasionally inhabit granaries are seen in motion during the winter season. They breed in the spring, and produce from five to eight at a time. They

are sometimes seen in considerable numbers basking near the entrances of their holes, and when disturbed utter the same kind of shrill whistle as the common Marmot. They are said to be very irascible and quarrelsome among themselves; and their bite is very severe. They feed not only on vegetable but also on animal food, and are observed to destroy small birds and other animals. Notwithstanding their native wildness, hardly any animal is more easily tamed. Even those which are full grown, will grow tolerably familiar in the space of a single day. The females, however, which are fiercer than the males, are much less readily tamed, especially if taken at an advanced age. They are of an extremely cleanly disposition, and, after feeding, generally wash their faces in the manner of cats, and clean their fur with the greatest diligence. Dr. Pallas kept several for a considerable time, and had thus an opportunity of observing with peculiar exactness their habits and manner of life: like other domestic animals, they were fond of being caressed, and would readily feed from the hand: their sleep was extremely profound, and commenced very early in the evening, continuing during the whole night; and even during a good part of the day, if the weather happened to be cold or rainy.

SCIURUS. SQUIRREL.

Generic Character.

<i>Dentes Primores superiores cuneati, inferiores acuti.</i>	<i>Upper front-teeth cuneated, lower sharp.</i>
<i>Molares ad utrumque latus superiores quinque, inferiores quatuor.</i>	<i>Grinders in the upper jaw five on each side, in the lower four.</i>
<i>Claviculae perfectæ.</i>	<i>Clavicles in the skeleton.</i>
<i>Cauda disticha.</i>	<i>Tail (in most species) spreading towards each side.</i>

THE animals composing this elegant genus are remarkable for the liveliness of their disposition, the celerity of their motions, and the general beauty and neatness of their appearance. They inhabit woods, live entirely on vegetable food, and take up their residence in the hollows of trees, where they prepare their nests. Some species are furnished with an expansile lateral skin, reaching from the fore legs to the hind ; by the help of which they are enabled to spring to a greater distance than the rest of the genus, and to transport themselves occasionally from tree to tree ; but this momentary support in air is all that they are capable of, and though called, from this circumstance, *flying squirrels*, they are unable to

GREAT SQUIRREL.



continue that action in the manner of bats. The species of Squirrels enumerated in the twelfth edition of the *Systema Naturæ* of Linnæus amounted to no more than eleven; but such has been the spirit of research among modern naturalists, that the number is now increased to near thirty.

GREAT SQUIRREL.

Sciurus Maximus. S. ferrugineus, subtus flavesiens, artibus extus caudaque nigris.

Ferruginous Squirrel, yellowish beneath, with the outsides of the limbs and tail black.

Sciurus maximus. Lin. Syst. Nat. Gmel. p. 149.

Le grand Ecureuil de la côte de Malabar. *Sonnerat, Voy. 2. p. 139. pl. 87.*

OF all the species yet discovered, this is the largest, being equal in size to a cat. It is a native of India, and was first described by Mons. Sonnerat, who informs us that it is found in the Malabar country, and especially about the mountains of Cardamone, where it feeds on fruits, and is particularly fond of the milk of the cocoa-nut, which it pierces, when ripe, in order to obtain to the liquor. The fur on the whole animal is long and full: the top of the head, ears, back, and sides, are ferruginous, and a small band of a similar colour commences beneath each ear, passing along the neck towards the sides. Part of the neck in front, the beginning of the body, and outsides of the shoulders and thighs, are black:

the tail is also black : the head, under part of the neck, insides of the limbs and belly, are yellowish ferruginous, somewhat paler on the breast : the iris of the eye is of a pale yellow : the fore-feet have four toes with crooked claws, and a very small thumb or fifth toe, with a small rounded nail : the hind-feet have five toes, with strong crooked claws on all : the tail is longer than the body, and appears equal to it in size when fully expanded. This animal, according to Sonnerat, is easily tamed, and is called about the coasts of Malabar of the name of the *Great Wood Rat*.

MADAGASCAR SQUIRREL.

Sciurus Madagascariensis. S. niger, subtus, naso auriculisque albidoflavescensibus, cauda longissima angustata.

Black Squirrel, with the nose, ears, and under parts, yellowish-white, and very long tapering tail.

L'Ecureuil de Madagascar. *Buff. Suppl. 7. p. 356. pl. 63.*

THIS which, from Mr. Cepede's description, given in the 7th supplemental volume of Buffon, should seem equal in size to the preceding, is said to measure seventeen inches to the tail, which is still longer, and of a dissimilar appearance to that of other squirrels ; and rather resembling that of a cat, but feathering towards each side, and terminating in a very taper point. The whole upper parts and tail are of a deep black, and the nose, ears, and whole under parts, yellowish white :

the ears are plain or not tufted. It is a native of Madagascar.

LONG-TAILED SQUIRREL.

Sciurus Macrourus. S. fuscus, subtus albido-flavescens, cauda corpore duplo longiore.

Dark-brown Squirrel, yellowish white beneath, with the tail twice the length of the body.

Sciurus Macrourus. S. cauda corpore duplo longiore grisea.
Lan. Syst. Nat. Gmel. p. 148.

Sciurus zeylonicus, &c. Rukkaia dictus. Raj. Quadr. p. 215.

Long-tailed Squirrel. *Penn. Ind. Zool. pl. 1.*

THIS was first described by Mr. Pennant in the Indian Zoology, and is said to be thrice the size of the common European Squirrel, with the crown of the head and the back black, and the cheeks, legs, and belly, of a dull yellow: between the ears is a yellow spot, and from each ear is a bifurcated black line pointing down the cheeks: the feet are black above, and red and naked beneath: the tail is near twice the length of the body, very full of hair, and of a light ash-colour: at the part next the body the hairs surround it, but on the remainder they flatten or spread on each side.

There is some reason for doubting whether this animal be really distinct from the preceding species. It is said to be found in Ceylon and Malabar. Mr. Pennant's description was made from the drawing engraved in the Indian Zoology, and upon the fidelity of the drawing must depend that of the description.

VAR.?

Abyssinian Squirrel. *Pennant Quadr. 2. p. 140.*

Sciurus Abessinicus. Lin. Syst. Nat. Gmel. p. 149.

AN obscure animal, known only from the description of Thevenot, who says it is thrice the size of a common squirrel, and of a rusty black above, with the belly and fore-feet grey, and the tail a foot and a half long. Thevenot adds, that it was purchased at Moco of an Abyssinian.

JAVAN SQUIRREL.

Sciurus Bicolor. S. supra niger, infra fulvus, auriculis acutis imberibus, palmarum ungue pollicari magno rotundato. Lin. Syst. Nat. Gmel. p. 148.

Blackish Squirrel, fulvous beneath, with pointed beardless ears, and large rounded thumb-claw.

Javan Squirrel. *Pennant Quadr. 2. p. 142.*

THIS also is a large species, measuring twelve inches to the tail, which is of the same length. The whole upper parts of the animal, with the outsides of the limbs, are of a dark or blackish brown, and the whole under parts, from the chin to the tail, of a bright fulvous or fox-colour: the tail is fox-coloured, with a cast of brown on its upper surface: the ears are short and hairy, but not furnished with long pencil-like hairs at the tips: the fore-feet are similar in structure to those of the Great Squirrel, first described, hav-

ing a very short thumb or interior toe, with a small rounded nail-shaped claw. It is said to be an inhabitant of Java, where it was observed by Mr. Sparrman.

GEORGIAN SQUIRREL.

Sciurus Anomalus. S. supra flavus fusco mistus, subtus obscure fulvus, cauda concolore, auriculis imberbibus rotundatis. Lin.
Syst. Nat. Gmel. p. 148.

Dusky-ferruginous Squirrel, with tail and under parts fulvous, and rounded beardless ears.

Sciurus Anomalus. Guldenstedt. Schreber. p. 781. t. 115. C.

THIS species is said by its describer, Mr. Guldenstedt, to be a native of Georgia in Asia, and to be larger than a common squirrel. Its colour on the upper parts of the head, body, and limbs, is dusky ferruginous, and of the under parts and tail, bright ferruginous, the breast and belly being paler than the other parts; the ears are small and slightly sharpened at the tips*.

* In the figure published by Mr. Schreber in his History of Quadrupeds, and which, he tells us, was communicated by Dr. Pallas, the ears are represented rather sharp-pointed; yet in the specific character, given by Dr. Gmelin, they are said to be rounded.

RUDDY SQUIRREL.

Sciurus Erythræus. S. supra ex flavo et fusco mistus, infra ex sanguineo-fulvus, auriculis ciliatis, cauda ex sanguineo fulva.

Lin. Syst. Nat. Gmel. p. 148. Pall. Glir. p. 377.

Yellowish-brown Squirrel, with the under-parts and tail red-ferruginous, and ciliated ears.

Ruddy Squirrel. *Pennant Quadr. 2. p. 143.*

THE size of this species is said to be somewhat larger than that of a common squirrel. Its colour above is dusky ferruginous or yellowish brown, and beneath of the brightest deep ferruginous, or inclining to a sanguine red, and its tail is of the same colour, with a blackish stripe running down it: the fore-feet have four toes, with a rounded or wart-like protuberance in place of a thumb: the hind feet have five toes; the ears are slightly bearded. It is said to be a native of India. Upon the whole, I cannot but think that this animal is in reality no other than a variety of the *Javan Squirrel*. Yet Dr. Pallas, who mentions it in his *Glires*, seems to consider it as distinct.

BOMBAY SQUIRREL.

Sciurus Indicus. S. cauda longitudine corporis apice aurantia.
Lin. Syst. Nat. Gmel. p. 149.

Purple-brown Squirrel, yellow beneath, with the tip of the tail
orange-coloured.

Bombay Squirrel. *Pennant Quadr. 2. p. 143.*

THIS species appears to have been first described by Mr. Pennant, from a specimen preserved in the Museum of Dr. William Hunter. Its length is sixteen inches to the tail, which measures seventeen inches. The head, back, sides, upper parts of the legs and thighs, together with the tail, are of a dull purple; the lower part of the legs and thighs and the belly yellow; the end of the tail orange-coloured: the ears are tufted. It is a native of India, and is found about Bombay; but, according to Mr. Pennant, extends to Belisere, the opposite part of the peninsula of Hindostan. The species described and figured in the 7th supplemental volume of the Count de Buffon's Natural History, under the name of *Le Grand Ecureuil de la côte de Malabar*, is suspected by Mr. Pennant to be no other than a variety of the above. Should this be the case, it follows that the Bombay Squirrel is in reality the same with the *Great Squirrel* (*Sciurus Maximus*) first described.

COMMON SQUIRREL.

Sciurus Vulgaris. S. auriculis apice barbatis, cauda dorso con-
colore. Lin. Syst. Nat. Gmel. p. 145. *Reddish brown Squirrel, white beneath, with pencilled ears.*
Sciurus vulgaris rufus, &c. Briss. Quadr. 150. n. 1. *Sciurus. Gesn. Quadr. 845. Aldr. dig. 396. Jonst. 163.*
L'Ecureuil. Buff. 7. p. 253. pl. 32.
Common Squirrel. Pennant Quadr. 2. p. 139.

THE general appearance and manners of this species are so well known that it might seem almost unnecessary to particularize them. It is a native of almost all parts of Europe as well as of the northern and temperate parts of Asia, but is observed to vary in the cast of its colours in different climates, and in the northern regions becomes grey in winter* : it also varies occasionally in size. The general measure of the European Squirrel seems to be about eight inches from nose to tail, and of the tail about seven. The colour is

* This change of colour in the northern squirrels is not altogether owing to the severity of the cold, but takes place even in such as are kept in a warm room. Dr. Pallas had one brought to him on the 12th of September, which was then entirely red, or of the usual bright ferruginous colour ; but, about the 4th of October, many parts of the body began to grow hoary ; and at the time of its death, which happened on the 4th of November, the whole body had attained a grey colour, and the legs alone with a small part of the face, retained their original tinge. The furs of the northern squirrels, in their grey or winter state, are extremely fine and soft, and are known to the furriers by the name of *Petit-Gris* ; by which title according to the Count de Buffon, those belonging to the Grey Squirrel of America, or following species, are also called.

a bright reddish brown, except on the breast and belly, which are nearly white: these colours are brightest in summer, and on the approach of winter change to a greyer or browner tinge: the eyes are large, black, and lively: the ears upright, and ornamented with long tufts or pencils of hair of a richer colour than that of the body: the legs are short and muscular; the toes strong and divided to their origin; the claws strong and sharp; so that the animal can readily climb the smoothest trees: on the fore-feet are only four toes, with a claw in the place of a thumb or inner toe: on the hind-feet are five toes: the tail is covered with very long hair, so disposed as to turn towards each side. In the spring these animals seem peculiarly active, pursuing each other among the trees, and exerting various efforts of agility. During the warm summer nights they may be also observed in a similar exercise. They seem, as Buffon observes, to dread the heat of the sun, for during the day they remain commonly in their nests, making their principal excursions by night. Their habitation is so contrived as to be perfectly clean, warm, and impenetrable by rain, and is composed of moss, dried leaves, &c. and situated between the fork of two branches: it has only a small aperture near the top, which is of a conical form, so as to throw off the rain. The young are generally three or four in number, and are produced about the middle of summer, or sometimes earlier.

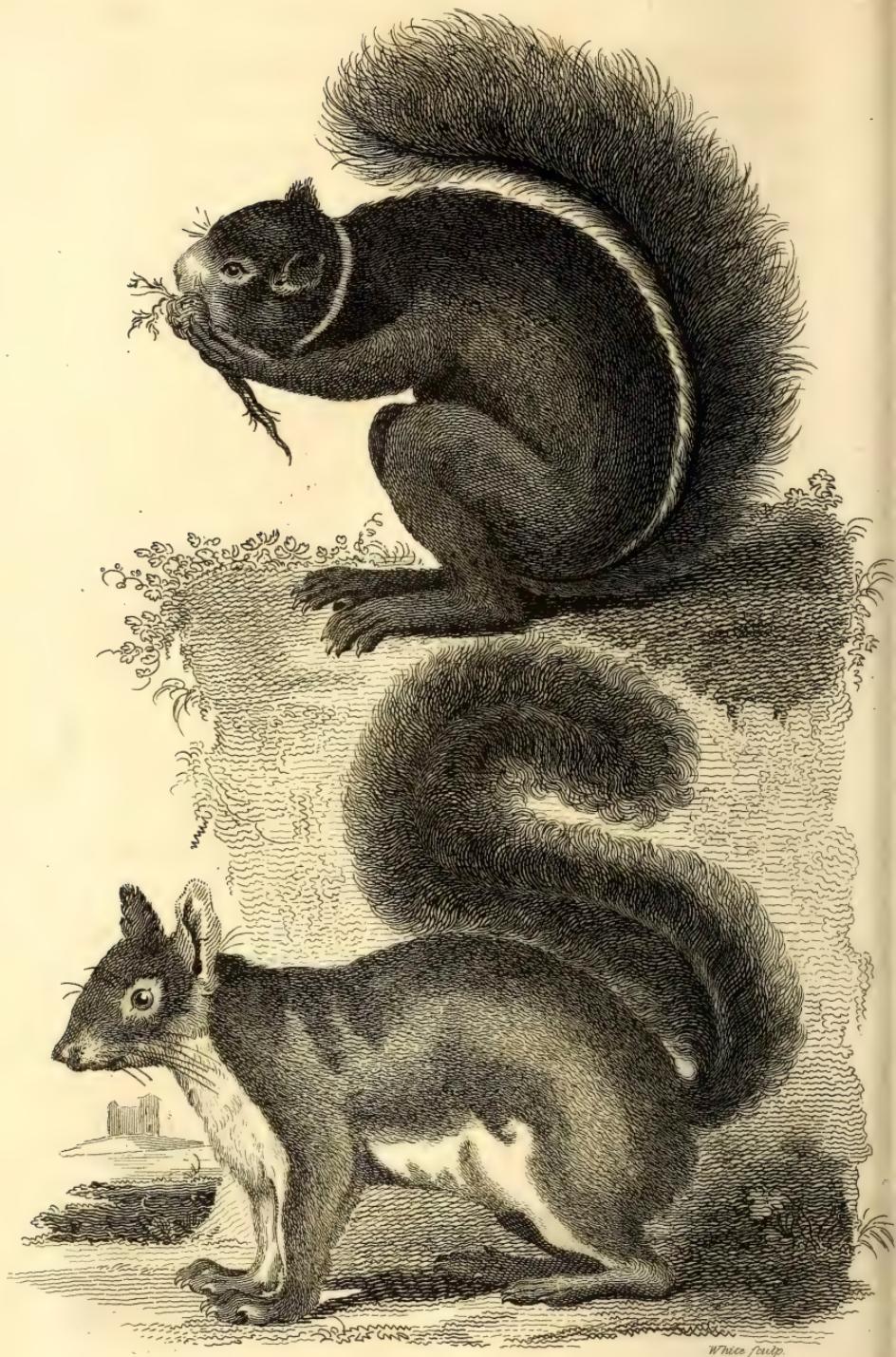
The Squirrel feeds on the buds and young shoots of trees, and is said to be particularly fond of those of the fir and pine : it also collects great quantities of nuts, which it deposits in the hollows of trees for its winter food, together with beech-mast, acorns, &c. Dr. Pallas also assures us, that those of Siberia collect various kinds of fungi for this purpose. In a state of captivity, nuts form its principal food, but it will also eat a great variety of fruits and other vegetable substances, and is delighted with sugar and various sweets.

In some parts of Siberia the Squirrel is found entirely white, with red eyes. About lake Baikal it is often entirely black, or black with the belly white : and in some parts of Europe, and particularly in our own country, it is occasionally found with the tail milk-white, and all the other parts of the usual colour.

The Squirrel is an animal which in a state of nature can seldom have occasion to visit the water for the purpose of drinking, like other quadrupeds, and can obtain a sufficient supply of dew and rain from the leaves and the hollows of trees. It has even been supposed to have a dread of water ; and it is affirmed by Gesner, from Olaus Magnus, and others, that when it wishes to pass a river or lake, in order to reach the trees that lie beyond, instead of swimming, it gets on a piece of bark, or other convenient substance, and elevating its tail to catch the wind, is thus transported to the opposite side. Some writers have affirmed that the

BLACK SQUIRREL.

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GREY SQUIRREL.

Lapland Squirrels sail over the lakes of that country in large parties, each mounted on his piece of bark, and fanning the air with his tail to promote the progress of his vessel. These tales, which do not appear very probable, must rest on the faith of their recorders.

GREY SQUIRREL.

Sciurus Cinereus. S. cinereus, ventre albo, auriculis imberibus.

Lin. Syst. Nat. Gmel. p. 147.

Ash-coloured Squirrel, white beneath, with beardless ears.

Sciurus Virginianus cinereus, &c. Raj. Quadr. 215.

Grey Squirrel. *Pennant Quadr. 2. p. 144. Catesb. Carol. 2. p. 74 pl. 74.*

Le Petit-Gris. *Buff. 10. p. 116. pl. 25.*

THIS species is confined to North America, in many parts of which it is extremely common, and in its general form, as well as in its way of life, resembles the European Squirrel. It is a large and elegant animal, being of the size of a half-grown rabbet, and measuring about twelve inches to the tail: different individuals, however, vary somewhat in point of size. The whole animal is of an elegant pale grey, with the insides of the limbs and the under parts of the body white: the ears and tail are sometimes tinged with black, and a yellowish cast prevails in some particular specimens. This animal is said to be found in Canada, Pennsylvania, Virginia, and other American districts; though, according to Mr. Pennant, it scarce extends farther north than New England.

Mr. Pennant also allows that it is a native of South as well as North America. In the latter it is in some years so extremely numerous as to do incredible damage to plantations, especially those of maiz or Indian corn; for which reason it is one of the proscribed animals among the colonists. A reward of no less than three pence per head having been sometimes given for every one killed; and this, says Mr. Pennant, "proved such an encouragement, as to set all the idle people in the province in pursuit of them. Pennsylvania alone paid, from January, 1749, to January, 1750, no less a sum than 8000l. of their currency; but, on complaint being made to the deputies, that their treasuries were exhausted by these rewards, they were reduced to one half." "How improved," adds Mr. Pennant, "must the state of the Americans be, in thirty-five years, to wage an expensive and successful war against its parent country, which before could not bear the charges of clearing the provinces from the ravages of these insignificant animals!" This species resides principally among trees, in the hollows of which it makes its nest, with straw, moss, &c. feeding on acorns, fir-cones, maiz, &c. as well as on fruits of various kinds. It is said to amass great quantities of provision for winter, which it deposits in holes which it prepares beneath the roots of trees, &c. It is a difficult animal to kill; changing its place on the trees with such expedition, as generally to elude the shot of the quickest marksman. It is said to be easily

tamed, and in that state will readily associate with other domestic animals.

BLACK SQUIRREL.

Sciurus Niger. S. niger, auriculis imberibus. Lin. Syst. Nat.

Gmel. p. 147.

Black Squirrel, with beardless ears.

Black Squirrel. *Catesb. Carel. 2. p. 73. pl. 73. Pennant Quadr. 2. p. 145.*

THIS is so much allied to the preceding, that it might be considered as a variety rather than a distinct species, were we not assured that it never associates with the grey squirrel; from which it also differs in having a somewhat shorter tail. It is entirely of a shining coal-black colour, except that the muzzle and the tip of the tail are sometimes white: specimens have also been seen with a white ring round the neck. In its manners it perfectly resembles the grey squirrel, inhabiting similar places, and committing equal depredations.

Var.?

CAT SQUIRREL.

THIS is said to be equal in size to the grey squirrel, but to have a coarse fur, mixed with dingy white and black; the throat, insides of the legs, and thighs, black; the tail much shorter

than in other squirrels, and of a dull yellow mixed with black. It is a native of Virginia, and was described by Mr. Pennant from a specimen in the collection of Mr. Knaphan. The figure given by Mr. Schreber, in his work on quadrupeds has every appearance of a mere variety of the grey squirrel; the tail being of similar length, and differing only in having a ferruginous cast. Perhaps the tail in the specimen described by Mr. Pennant might have been accidentally mutilated.

HUDSON'S BAY SQUIRREL.

Sciurus Hudsonius. S. auriculis imberibus, dorso glanco, ventre cinereo, cauda breviore ex rufescente glanca nigro marginata.
Lin. Syst. Nat. Gmel. p. 147.

Iron-grey Squirrel dashed with ferruginous, whitish beneath, with dusky side-stripe, and lanceolated tail edged with blackish.

Hudson's Bay Squirrel. *Pennant Quadr. 2. p. 147.*

THE Hudson's Bay Squirrel is a native of the colder parts of North America, and more particularly of the region from whence it takes its name. It resides in the pine-forests of that country, and feeds chiefly on the cones. It is smaller than the common European squirrel, and the tail is neither so long in proportion, nor so full of hair. The colour of the upper parts is palish iron-grey, with a cast of ferruginous down the back, and of the under parts whitish or pale ash-

colour; the colours being pretty distinctly separated down the sides by a dusky line: the beginning of the tail is ferruginous, gradually sinking into iron-grey, and is of a narrow lanceolate form, with a sharp termination. This species is said not to alter its colour during the whole year. In winter it keeps in its nest, and makes its appearance on the return of the warm season.

Var. ?

CAROLINA SQUIRREL.

THIS, though stationed as a distinct species by Mr. Schreber, is considered by Mr. Pennant as a variety only of the preceding. Its size is the same, but the disposition of the colours different: the head, back, and sides, being grey, white, and ferruginous, intermixed; the belly white, and the colour divided from that of the sides by a rust-coloured line: the lower part of the legs is red; the tail brown, mixed with black, and edged with white. It is found in Carolina.

PERSIAN SQUIRREL.

Sciurus Persicus. S. obscurus, lateribus albis, subtus flavus, auriculis imberibus, cauda ex atro cinerea annulo albo. Lin. Syst Nat. Gmel. p. 148.

Dusky Squirrel, yellow beneath with white sides, beardless ears and blackish-grey tail with a white band.

IN its general appearance and way of life this is said to resemble the common squirrel, but differs in colour, and in having plain or untufted ears: the upper parts are dusky, with the parts about the eyes black; the throat, breast, and belly, yellow, and the sides white: the tail blackish-grey, marked beneath, about the middle, with a white band; the feet reddish. It is an inhabitant of the mountainous parts of Persia.

FAIR SQUIRREL.

Sciurus Flavus. S. auriculis subrotundis, pedibus pentadactylis, corpore luteo.

Yellow Squirrel, with roundish ears and pentadactyle feet.

Fair Squirrel. Pennant Quadr. 2. p. 148.

THIS small species is said by Linnæus to be half the size of a common squirrel, and of a yellow colour, with the hairs tipped with white: the thumb of the fore-feet consists of little more than a very small claw. It is, according to Linnæus, an inhabitant of Carthagena in America, but it has likewise been supposed a native of India, and

is an animal not very distinctly known. Mr. Schreber seems to entertain some doubt whether it properly belongs to this genus.

BRASILIAN SQUIRREL.

Sciurus Aëstuans. S. griseus, subtilis flavescens. Lin. Syst. Nat. Gmel. p. 151.

Dusky Squirrel, yellow beneath, with longitudinal white stripe in the middle.

Brasilian Squirrel. *Pennant Quadr. 2. p. 149.*

THE first describer of this species was Mr. Pennant, who was presented with two specimens brought from South America. The head, body, and sides, are covered with soft dusky hairs tipped with yellow: the ears are plain, or without tufts; the tail rounded, and the hairs annulated, with black and yellow: the throat cinereous, the inside of the legs and the belly yellow, the latter divided down the middle by a white line, interrupted for a small space, and then continued to the tail. The length of the animal is eight inches and a quarter to the tail, and the tail ten.

Varied or Striped Squirrels.

COQUALLIN.

Sciurus Variegatus. S. corpore supra nigro albo fuscoque variegato. Lin *Syst. Nat. Gmel.* p. 151.

Subferruginous Squirrel, orange-tawny beneath, with the upper parts varied transversely with black brown and whitish undulations.

Le Coquallin. *Buff.* 13. p. 109. pl. 3.

Varied Squirrel. *Pennant Quadr.* 2. p. 147.

The title of Coquallin, applied to this animal, was instituted by the Count de Buffon, as an elegant abbreviation of the sesquipedalian name *Quauhete-collotlquapachtli*, by which it is said to have been called by the Mexicans. It is about twice the size of a common squirrel, and is transversely variegated on the upper part of the body with numerous undulations of black, white, and orange-brown, the under part being orange-tawny: the head, tail, and limbs, are dusky, and the ears and muzzle whitish. The manners of this species are somewhat different from those of the generality of Squirrels, since it does not reside on trees, but in holes under their roots, where it brings forth its young, and deposits a magazine of grain and fruits for winter use. It is a native of Mexico, and is said to vary in size, being sometimes scarce larger than a common squirrel. It also varies as to the distinctness or intensity both of the ground colour and variegations, and sometimes exhibits only an appearance of brown streaks on a ferruginous or reddish-

brown ground-colour, somewhat in the manner of a cat.

MEXICAN SQUIRREL.

Sciurus Mexicanus. S. cinereo-fuscus, striis 5—7 albidis longitudinalibus.

Ash-brown Squirrel, with five or seven longitudinal white stripes.

*Sciurus rarissimus ex Nova Hispania. Seb. I. p. 76. t. 47.
f. 2, 3.*

Mexican Squirrel. *Pennant Quadr. 2. p. 149.*

THIS animal is known only from the figures and description of Seba. It is considerably smaller than a common squirrel, and is of a mouse-colour, with seven white lines or streaks on the back, extending to some distance down the tail. The female has five streaks only. Seba's figure of the male represents it with the tail, as if furcated at the end into four parts, and in the description this remarkable circumstance is commemorated; but as the tail of the female exhibits no such appearance, we may conclude that the individual above mentioned was marked by some singular lusus naturæ. Seba also figures another, of a plain colour, but which seems either the same species or greatly allied to it.

BARBARY SQUIRREL.

Sciurus Getulus. S. fuscus, striis quatuor albidis longitudinalibus.

Lin. Syst. Nat. Gmel. p. 150.

Brown Squirrel, with four longitudinal white stripes.

Sciurus Getulus. Aldr. dig. 405. Gesn. Quadr. 112.

Le Barbaresque. Buff. 10. p. 126. pl. 27.

Barbarian Squirrel. Edw. p. 198.

White-striped Squirrel. Pennant Quadr. 2. p. 150.

THIS species is of the size of a common squirrel, and of a reddish brown colour, with the legs somewhat paler, and the belly white: the body is marked on each side with longitudinal white stripes, and the tail is barred or shaded with alternate dark and light stripes: the ears are plain or without tufts, and are whitish, as are likewise the orbits of the eyes. It is a native of Barbary.

PALM SQUIRREL.

*Sciurus Palmarum. S. subgriseus, striis tribus flavicantibus,
cauda albo nigroque lineata. Lin. Syst. Nat. Gmel. p. 149.*

Brown Squirrel, pale beneath, marked above with three longitudinal yellowish stripes, and the tail with blackish ones.

Mustela Africana. Clus. exot. p. 112.

Le Palmiste. Buff. 10. p. 126. pl. 26.

Palm Squirrel. Pennant Quadr. 2. p. 149.

The Palm Squirrel is somewhat larger than a common squirrel*, and is very nearly allied to

* The measures given by Daubenton of the specimen described by Buffon, were from the young animal, and consequently fall short of the proper size.

STRIPED SQUIRREL.



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BARBARY SQUIRREL.



the preceding species; but is of a deeper colour, and is marked by five stripes instead of four. The head and upper parts are of a very dark ferruginous brown, palest on the limbs; the throat, breast, and belly, are pale yellow; on the back is an obscure pale yellow stripe, and on each side the body are two of a similar colour, of which the lower are far less distinctly marked than the upper: the tail is of a dull or dingy yellow, barred or rather striped in a longitudinal direction with blackish bands. In some specimens the two lowest side-stripes are scarce distinctly perceptible; so that the species is more securely described in its specific character, by particularizing three stripes only. This animal is an inhabitant of the hotter parts of Asia and Africa, frequenting palm-trees, and in its liveliness and general habits much resembles the common European squirrel.

GINGI SQUIRREL.

Sciurus Ginginianus. *S. griseus, fascia utrinque longitudinali alba, cauda nigricante.*

Grey-brown Squirrel, with a longitudinal white stripe on each side, and blackish tail.

Sciurus Dschinschicus. *S. testaceus, fasciis lateralibus orbitisque albis, cauda nigra.* *Lin. Syst. Nat. Gmel. p. 151.*

THIS species is described by Sonnerat, who informs us that it is rather larger than the European squirrel, and of a brownish grey colour, lighter on the belly, legs, and feet: on each side

the belly is a white band, reaching from the shoulders to the thighs; the eyes are also encircled with white, and the tail is black, with whitish hairs intermixed. It is an inhabitant of Gingi in the East Indies.

VAR.?

Plantane Squirrel. *Pennant Quadr.* 2. p. 151.

THIS, says Mr. Pennant, much resembles the common squirrel, but is lighter coloured, and has a yellow line extending along the sides from leg to leg. It is common in Java and Prince's Island, and is called by the Malayee, Ba-djing: it lives much on plantanes; is very shy; retreats at the sight of mankind, and clatters over the leaves of the plantanes with vast noise. It is also common on the tamarind trees.

CHILIAN SQUIRREL.

Sciurus Degus. S. fusco-flavescens, linea humerali nigra. Lin.

Syst. Nat. Gmel. p. 152. Molin. Chil. p. 269.

Yellowish-brown Squirrel, with a black stripe on each shoulder.

THIS species is mentioned by Molina in his Natural History of Chili. It is somewhat larger than a black rat, and is of a yellowish brown colour, with a black stripe on each shoulder: the nose is sharp, the ears rounded, and the tail flocky towards the tip, and of the same colour with the body. It is a gregarious animal, and

inhabits holes in shrubby places, feeding on roots and fruits, of which it collects a magazine for food.

STRIPED SQUIRREL.

Sciurus Striatus. *S. fusco-flavescens, striis quinque longitudinalibus nigricantibus.*

Yellowish-brown Squirrel, with five longitudinal blackish stripes.

Sciurus flavus, strüs quinque fuscis longitudinalibus. *Lin. Syst. Nat. p. 87.*

Ground Squirrel. *Catesb. Car. 2. pl. 75.* *Laws. Car. p. 124.*
Edw. pl. 181.

L'Ecureuil Suisse. *Buff. 10. p. 126. pl. 28.*

Striped Dormouse. *Pennant Quadr. 2. p. 157.*

THE Striped Squirrel is a native of the northern regions of Asia, and of several of the colder parts of North America : it has also been found, though very rarely, in some parts of Europe, and differs from the major part of the squirrel tribe in its manner of life, which rather resembles that of the dormouse, being chiefly passed in subterraneous retreats or burrows, the apartments of which are filled with various stores of acorns, nuts, grain, &c. collected for winter use. It also resembles some of the murine tribe, in being provided with cheek-pouches, for the temporary reception of food : a particularity not to be found in any other species of squirrel. Its general length is about five inches and a half, and of the tail rather more. Its colour on the upper parts is a reddish brown, and on the under white : down the ridge of the

back runs a black streak ; and on each side the body are two others, the included space between each being of a pale yellow tinge : the tail is marked with annuli or circular spaces, like that of a mouse, but the fur spreads slightly on the sides, as in the rest of the squirrels, though in a much less conspicuous manner ; and the tips of the hairs, being blackish, give the appearance, when the tail is spread, of three lines or streaks through its whole length.

These animals are, according to the observations of Dr. Pallas, extremely common in Siberia, inhabiting the maple and birch woods of that country, and generally forming their nests or burrows near the root of some tree : they are never known to ascend trees in the manner of other squirrels, unless suddenly surprised or pursued, when they climb with great expedition, and conceal themselves among the branches : they collect their stores during the autumnal season, and on the setting in of winter conceal themselves in their burrows, the entrances of which they stop ; and pass the greatest part of the rigorous season in sleep, and in feeding on their collected stores ; but if, by an unusual continuance of severe weather, their provisions happen to fail, they then sally out in quest of fresh supplies, and occasionally make their way into granaries, and even into houses. In the choice of their food they are remarkably nice, and have been observed, after filling their pouches with rye, to fling it out on meeting with wheat, and replace it with the su-



COMMON FLYING SQUIRREL.

terior grain. They are of a wild nature, and are by no means easily reconciled to a state of captivity; continuing timid, and shewing no symptoms of attachment to their owners. They are taken merely on account of their skins, which, though forming but a slight or ordinary fur, have a very pleasing appearance when properly disposed, and are said to be chiefly sold to the Chinese. It has been doubted whether those found in America be really of the same species with the European or Asiatic kind; but the differences are by no means such as to justify a specific distinction; consisting merely in a very trifling variation of size and colours.

Flying Squirrels.

COMMON FLYING SQUIRREL.

Sciurus Volans. S. canus, subtus albus, hypochondrius dilatatis, cauda rotundata.

Pale-grey Squirrel, white beneath, with the side-skin dilated into a flying membrane.

Sciurus hypochondrius prolixis volitans, cauda rotundata. Lin. Syst. Nat. Gmel. p. 154.

Sciurus volans. Klein. act. angl. 1733.

Mus Ponticus, &c. Gesn. Quadr. 743.

European Flying Squirrel. Pennant Quadr. p. 155.

THIS highly elegant animal is the only Flying Squirrel yet discovered in Europe, where it is extremely rare, being found chiefly in the most northern regions, as in Finland, Lapland, &c. It

also occurs in some districts of Poland. In many parts of Asia it is far more common, and abounds in the birch and pine woods of Siberia in particular. It appears to have been confounded by authors with the Virginian Flying Squirrel (*S. Volucella*), but is a totally distinct species. Its colour on the upper parts is an elegant pale or whitish grey, and on the under parts milk-white. Its general size is inferior to that of a common squirrel, measuring about six inches* and a quarter to the tail, which is shorter than the body, thickly furred, of a slightly flattened form, and rounded at the extremity. It is to Dr. Pallas that we owe the history of this animal's manners; little more being known to preceding naturalists than its general form and manner of flight, or rather springing, which is performed by means of an expansile furry membrane, reaching from the fore-feet to the hind. In order the better to manage this part, the thumb of the fore-feet is stretched out to a considerable length within the membrane, so as to appear in the skeleton like a long bony process on each of the fore-feet. The Flying Squirrel generally resides in the hollows of trees towards the upper part; preparing its nest of the finer mosses. It is a solitary animal, and is only seen in pairs during the breeding season. It rarely makes its

* The specimen in the Leverian Museum measures about seven inches to the tail, which is about four inches long. There appears to be some mistake in the measures given of this species in Mr. Pennant's History of Quadrupeds, where it is said to measure four inches and a quarter from nose to tail, and the tail five inches.

appearance by day, emerging only at the commencement of twilight, when it may be seen climbing about the trees, and darting with great velocity from one to the other. The colour of its upper part so much resembles that of the pale silvery bark of the birch-trees which it frequents, that it is by no means easy to distinguish it, while engaged in climbing about during its evening exercise. It feeds chiefly on the young shoots, buds, and catkins of the birch, as well as on those of the pine, &c. In winter it continues in its nest; coming out only in mild weather; but does not become torpid during that season.

This animal readily springs to the distance of twenty fathoms or more, and by this motion conveys itself from the top of one tree to the middle part of that to which it directs its flight, which is always slightly downwards. It very rarely descends to the surface, and, when taken, and placed on the ground, runs or springs somewhat awkwardly, with its tail elevated, and as soon as it gains a tree, instantly begins to climb it with great activity, sometimes elevating, and sometimes depressing its tail. If thrown from the top of a tree, it immediately spreads its membranes, and, balancing itself, endeavours to direct its motion by the assistance of the tail. The young are produced about the beginning or before the middle of May, and are two, three, and sometimes four, in number: they are at first blind, and nearly void of hair; and the parent fosters them by covering them with her flying-membrane;

leaving her nest only at the approach of evening, and carefully concealing the young with the moss of the nest. The young begin to acquire their fur at six days old; and at the same time the front teeth are visible: they continue blind, however, for the space of about thirteen days.

These animals are very difficultly supported in a state of confinement, and, from want of proper food, &c. are rarely preserved for any considerable length of time. In their manner of sitting and feeding, as well as in the action of washing their face with their paws, &c. they resemble the common squirrel. Their colour continues the same through the whole year. The tail, which in the full-grown animal is broad and very full of hair, is in the young of a round or cylindric form. Their voice resembles that of a mouse. The fur of this species, though soft and beautiful, is but little esteemed, on account of the slightness of the skin, and its want of durability.



VIRGINIAN FLYING SQUIRREL.

VIRGINIAN FLYING SQUIRREL.

Sciurus Volucella. *S. fuscus, subtus albido-flavescens, hypochondrius dilatatis, cauda lanceolata.*

Brown Squirrel, yellowish-white beneath, with the side-skin dilated with a flying membrane.

Sciurus hypochondrius extensis volitans, cauda elongata villosa.
Lin. Syst. Nat. Gmel. p. 153.

Mus volans. *Lin. Syst. Nat. p. 75.*

Sciurus Americanus volans. *Raj. Quadr. 215.*

Le Polatouche. *Buff. 10. pl. 21.*

Flying Squirrel. *Catesb. Car. 2. pl. 76.* *Edw. pl. 191.* *Pennant Quadr. 2. p. 153.*

THIS species is much smaller than the preceding, from which it also differs in colour, being of an elegant brown or subferruginous mouse-colour above, and yellowish white beneath: the edges of the flying-membrane are of a darker or blacker tinge than the rest of the fur, contrasting with the white border of the under part: a few dusky undulations also take place about the back and shoulders: the tail is of a similar colour to the body, and of a flattened shape, or with the hair spreading towards each side, and the extremity somewhat sharpened: the eyes are large, and the ears rather short, almost naked, and slightly rounded. Its general length is five inches to the tail, which measures about four inches. It is a native of the temperate parts of North America, and has been found also in some of the southern parts of the American continent. It is an animal of great beauty, and is frequently kept

in a state of captivity, being readily tamed, feeding on various fruits, nuts, almonds, walnuts, &c. &c. and shewing a considerable degree of attachment to its possessor. Mr. Schreber assures us, that he saw one, which, on being held for some time in the hand of a stranger, would spring the length of a large room to the person to whom it had been most accustomed. It is naturally of a gregarious disposition, in which particular it differs widely from the preceding species, and may be seen, according to Mr. Catesby, flying, to the number of ten or twelve together, from tree to tree. Like the former species, it is chiefly a nocturnal animal, lying concealed during the day, and commencing its activity in the evening. It prepares its nest in the hollows of trees, with leaves, moss, &c. and it is said that several often inhabit the same nest, sometimes as many as twelve.

These animals reside constantly on the upper parts of trees, and never willingly quit them for the ground. They are said to be capable of swimming, in case of necessity; during which exercise they do not spread their membrane, but swim in the manner of other quadrupeds, and, after leaving the water, can exert their power of flight as readily as before. They are said to produce three or four young at a time.

SEVERN RIVER FLYING SQUIRREL.

Sciurus Sabrinus. S. volitans, supra ex rubicundo fuscus, subtus ex flavescente albidus, cauda villosa planiuscula.

Ferruginous-brown Flying Squirrel, yellowish white beneath, with slightly flattish villose tail.

Sciurus Hudsonius. Lin. Syst. Nat. Gmel. p. 153.

Greater Flying Squirrel. *Phil. Trans. vol. 62. p. 379.*

Severn River Squirrel. *Pennant Quadr. 2. p. 153.*

THIS is said to be at least equal in size to a common English squirrel, and is of a ferruginous ash-colour on the upper parts, and yellowish-white beneath: the flying-skin is disposed from leg to leg, as in the common flying squirrel, and the fur on the whole body is long and full: the tail also is well haired, but has less of the flat appearance than that of the European flying squirrel. It is found in the southern parts of *Hudson's Bay*, in the forests bordering on *Severn river* in *James's Bay*, and seems to have been first described by Dr. Forster in the Philosophical Transactions. I have given this species a new trivial, in order to avoid the repetition of the title *Hudsonius*, which takes place, through oversight, in the Gmelian edition of the *Systema Naturæ*.

HOODED FLYING SQUIRREL.

Sciurus Sagitta? *S. hypochondriis prolixis volitans, cauda planopinnata lanceolata.* Lin. Syst. Nat. p. 88.

Ferruginous-brown Flying Squirrel, pale ferruginous beneath, with the flying-membrane commencing on each side the head.

Sciurus Virginianus volans. Seb. mus. 1. p. 72. t. 44. f. 3.

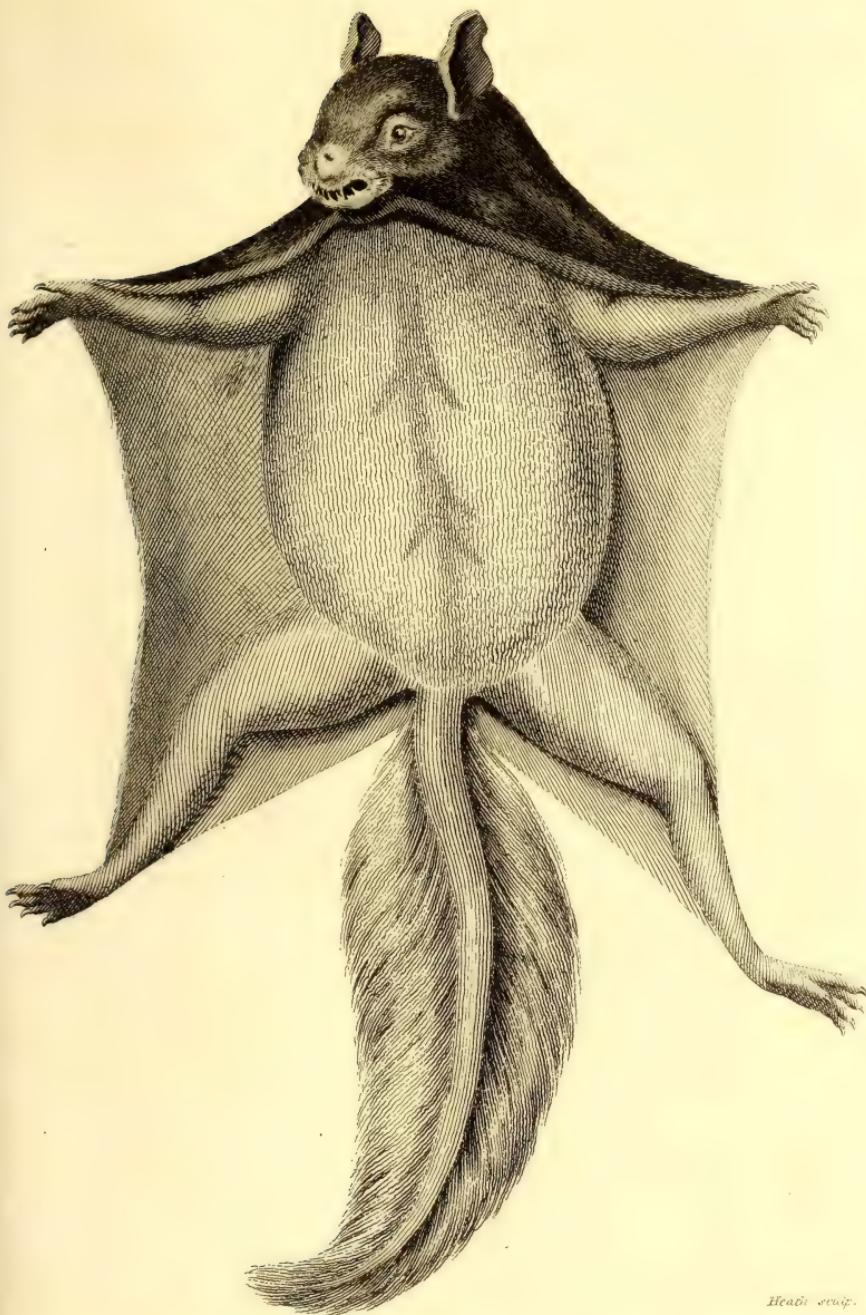
Sciurus cute a capite ad caudam relaxata volans. Lin. Syst. Nat. ed. 2. p. 46.

Hooded Squirrel. Pennant Quadr. 2. p. 155.

Das Kappen Eichhorn. Schreb. p. 822.

THIS, which appears to have been confounded by some authors with the *Taguan* or Great Flying Squirrel, is described by Linnæus, in the *Systema Naturæ*, where it is said to be of the size of a common squirrel, and of a dark ferruginous-brown above, and pale-ferruginous beneath: the tail is described as of the flatly-pinnated form, or with the hairs spreading towards each side, and the flying membrane is said to be extended from the head to the fore-feet, which is not the case in any species yet known, except in one described by Seba, and which has been named by Mr. Pennant the *Hooded Squirrel*. I am, therefore, strongly inclined to believe, that the animal described and figured by Seba is in reality the *Sciurus Sagitta* of Linnæus.

Seba describes the animal as rufous above and pale yellow-cinereous beneath, with feet resembling hands, and furnished with sharp crooked claws; the flying membrane commencing at the head, stretching along the neck, meeting under

*Hesperopterus swinhonis.*

HOODED FLYING SQUIRREL.

the throat, and thence extending to the fore and hind feet, and continued up the latter to the origin of the tail, which is rather long, and well covered with hair, so disposed as to spread on each side. He adds, that three specimens were in the cabinet of Mr. Vincent, one of which he was permitted to copy for his publication. His figure is about the size of a common squirrel, and is accurately represented, on a reduced scale, in the present work.

The only particular which appears to contradict the supposition above mentioned is the anomalous appearance of the teeth in the figure given by Seba, which do not resemble those of other squirrels, but rather those of the order *Ferae*. It is probable, however, since no mention is made of any such particular in the description, that this circumstance may have been merely owing to inattention on the part of the artist, and to that inaccuracy in minute particulars so common at the period of Seba's publication.

On the other hand, supposing the teeth to be accurately represented in Seba's figure, it is but just to allow that it may be really a distinct species, or may even form a separate genus, as distinct from that of *Sciurus* as the *Colugo* is from that of *Lemur*.

It is a native of Java, according to Linnæus, but Seba (perhaps erroneously) calls it a Virginian Squirrel.

TAGUAN.

Sciurus Petaurista. S. hypochondrius prolixis volitans, supra saturatissime ex castaneo, subtus dilute ferrugineus, vel supra niger subtus canus, cauda corpore longiore, villosissima, terete nigricante, media ferruginea. Lin. Syst. Nat. Gmel. p. 155. Pall. Miscell. Zool. p. 54. t. 6.

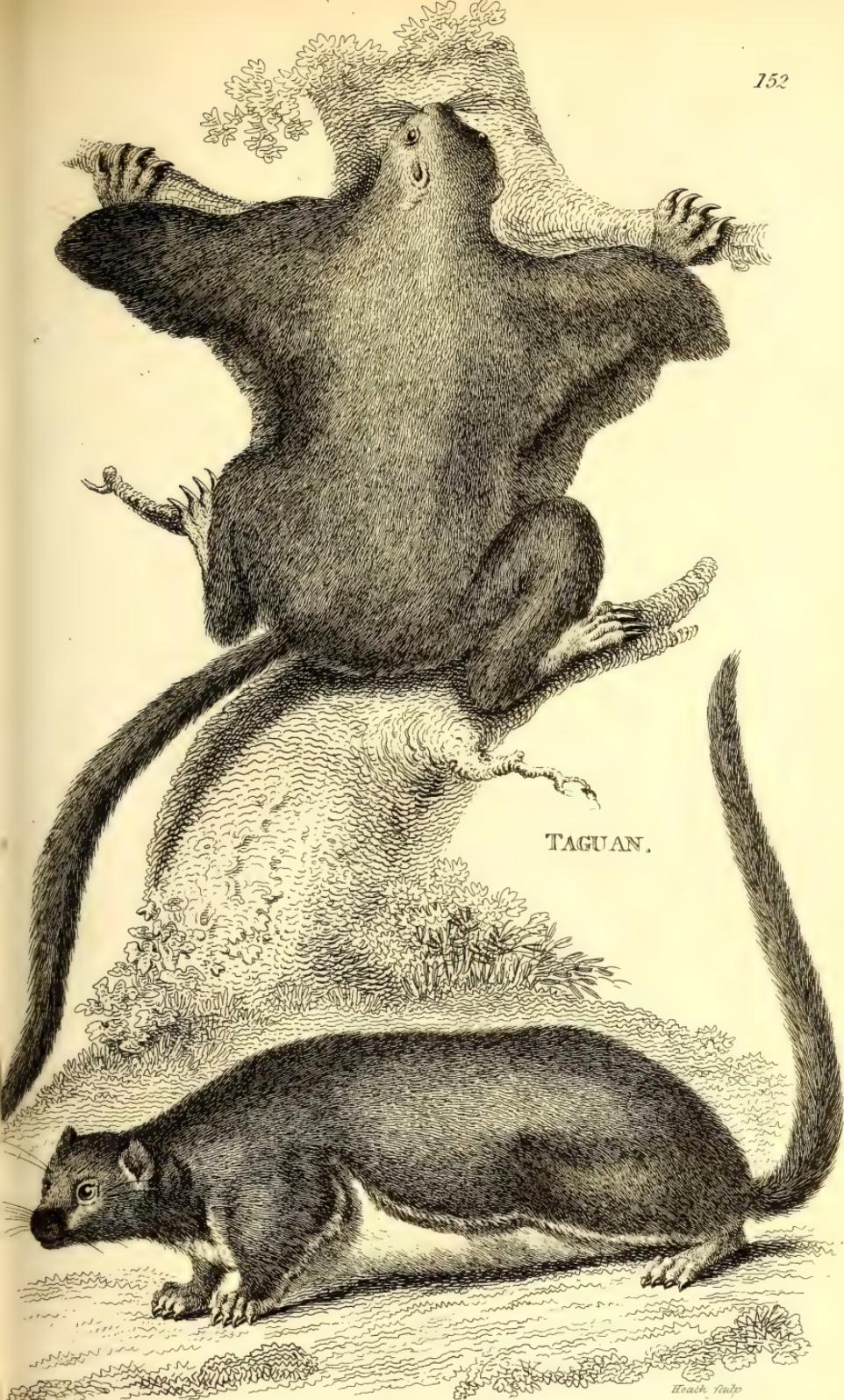
Chesnut-coloured Squirrel (sometimes blackish), pale ferruginous beneath (sometimes whitish), with very long, round, tapering, villose tail, and side-skin dilated into a flying membrane.

Taguan, ou Grand Ecureuil Volant. *Buff. Suppl. 3. p. 150. pl. 21. and 7. p. 265. pl. 67.*

Sailing Squirrel. *Pennant Quadr. 2. p. 152.*

THE Taguan is by far the largest of all the flying squirrels, measuring eighteen* inches to the tail, which is nearly of similar length, and instead of the flattened or spreading appearance exhibited in most of the squirrels, is of a cylindric form, or like that of a cat: the head is rounded, rather small in proportion, and somewhat flattened on the top: the muzzle blunt, the ears very small and without tufts, the limbs stout, the fore-feet armed with four claws, and the hinder with five: the colour on all the upper parts is chesnut, brighter or darker in different individuals, and having commonly a hoary or greyish cast on the back and shoulders: the limbs and the sides of the flying-membrane are darker than the other parts,

* In the 3d supplemental volume of Buffon we have an account of a skin which measured twenty-three inches from nose to tail.



TAGUAN.

Heath, 1870.



TAGUAN. var.

and the tail is still deeper or more inclining to black : the breast and all the under parts are yellowish white, sometimes inclining to ferruginous. The disposition of the flying-membrane is similar to that of the common flying squirrel : it is extremely thin towards the middle, and gradually thickens as it approaches the limbs and border, where the dark colour of its upper part is contrasted with that of the white edge or verge.

The Taguan is a native of India and the Indian isles, residing in woods, and springing to a vast distance from tree to tree. It is said to be more frequent in Java than in other parts.

The difference of colour in different specimens, some being dusky above and whitish beneath, others ferruginous above and yellowish beneath, may be owing perhaps to the difference between the male and female.

It may be added, that a strong general similarity takes place between this animal and the Petaurine Opossum (*Didelphis Petaurus*), which, in all probability, is also a native of many of the Indian isles, as well as of New Holland, and may have been sometimes confounded by travellers with the Taguan.

MYOXUS. DORMOUSE.

Generic Character.

<i>Dentes Primores duo : superiores cuneati : inferiores compressi.</i>	<i>Front-teeth two : the upper cuneated : the lower compressed.</i>
<i>Molares utrinque quatuor.</i>	<i>Grinders four in each jaw.</i>
<i>Mystaces longæ.</i>	<i>Vibrissæ long.</i>
<i>Cauda villosa, teres, versus apicem crassior.</i>	<i>Tail cylindric, villose, thicker towards the end.</i>
<i>Pedes æqualis longitudinis, anteriores tetradactyli.</i>	<i>Legs of equal length : fore-feet tetradactylous.</i>

FAT DORMOUSE.

Myoxus Glis. *M. canus, subtus albidus.* Lin. Syst. Nat. p. 155.
 Grey Dormouse, whitish beneath.
Sciurus Glis. Lin. Syst. Nat. p. 87.
Mus Glis. Pall. Glir. p. 88.
Glis. Plin. Hist. Nat. lib. 8. c. 57. Gesn. Quadr. 619.
Aldr. dig. 407.
Le Loir. Buff. 8. p. 158. pl. 24.
 Fat Dormouse. Pennant Quadr. 2. p. 158.

THIS species, the *Glis* of Pliny and the old naturalists, is a native of France and the South of Europe. It also occurs in Russia, Austria, &c. residing on trees, and leaping from bough to bough in the manner of a squirrel, though with a



FAT DORMOUSE.

less degree of agility. It feeds on nuts, acorns, fruit, &c. and during great part of the winter remains torpid in its nest, which is prepared in the hollows of trees, with dried leaves, moss, &c. During its state of torpidity it is said to grow very fat, contrary to the nature of most of the hibernating or sleeping animals; which are observed, on their first emerging from that state, to be far leaner than before its commencement. It is probable, however, that this animal awakes at intervals, and indulges in the use of its collected stores of provision; and the epigram of Martial must consequently be received with a proper degree of allowance for the popular belief of the ancients on the subject.

Tota mihi dormitur hiems; et pinguior illo
Tempore sum quo me nil nisi somnus alit.

Nurs'd by a long hibernal sleep,
I fatten by repose:
Nor food the nourishment can give
Which abstinence bestows.

It is but just to observe, that the Count de Buffon has very properly exposed the absurdity of the ancient notion; and has observed that the animal occasionally wakes, and makes use of its stock of provision. The truth is, that it is at all times fat, and appears as much so in spring as in autumn. By the ancient Romans it was numbered among the articles of luxury, and was fattened in proper receptacles, called *Gliraria*.

The size of this elegant species is not very far

short of that of a squirrel, measuring from nose to tail near six inches, and the tail four and a half. It is an animal of a much thicker form in proportion than a squirrel, and is of an elegant ash-colour, white on the under parts and insides of the limbs: the tail is very villose or furry, and of a slightly spreading form, like that of a squirrel: the eyes are large and black; the ears thin, rounded, and very slightly haired. Sometimes the upper parts of the body have a slight dusky and sometimes a ferruginous tinge. Its general manners resemble those of a squirrel; but it is not easily tamed. The young are produced about the middle of summer, and are four or five in number.

GARDEN DORMOUSE.

Myoxus Nitela. *M. rufus, subtus ex albo cinereus, macula nigra circa oculos et pone auriculas.* *Lin. Syst. Nat. Gmel. p. 156.*
Schreb. saeugth. p. 833. t. 226.

Rufous Dormouse, greyish-white beneath, with a black mark about the eyes and behind the ears.

Mus quercinus. *M. cauda elongata pilosa, macula nigra sub oculis.* *Lin. Syst. Nat. p. 156.*

Mus Nitedula. *Pall. Glir. p. 88.*

Mus avellanarum. *Gesn. Quadr. 833.* *Aldr. dig. 439.*

Le Lerot. *Buff. 8. p. 181. pl. 25.*

Greater Dormouse, or Sleeper. *Ray Quadr. 219.*

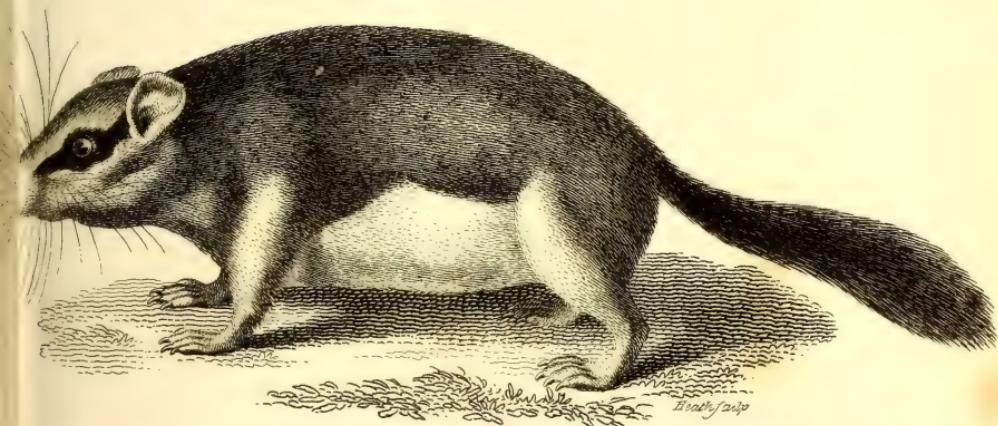
Garden Dormouse. *Pennant Quadr. 2. p. 159.*

THE Garden Dormouse is a native of the temperate and warmer regions of Europe and Asia,

GARDEN DORMOUSE.



WOOD DORMOUSE.



and is commonly found in gardens, feeding on various kinds of fruit; particularly peaches and apricots. It makes its nest, like the rest of this genus, in the hollows of trees, and sometimes in those of walls, or even in the ground about the roots of trees, &c. collecting, for this purpose, dried leaves, grass, mosses, &c. In autumn it collects a quantity of nuts, mast, &c. and deposits it in its hole; and during the greatest part of the winter remains in a state of torpidity, awaking only at distant intervals. Its general length is about four inches and a half, and the tail rather less. It is of an elegant rufous or ferruginous colour above, and yellowish white beneath: the eyes are imbedded in a large black patch or spot, which extends to some distance beyond each ear: the tail is somewhat wider towards the end, and sharpens at the extremity, and is marked on that part by a longitudinal black stripe, having the edges white. These animals produce their young about the middle of summer, which are about five or six in number, and are said to be of very quick growth.

WOOD DORMOUSE.

Myoxus Dryas. *M. ex griseo rufus, subitus sordide albus, linea nigra recta utrinque per oculos ad auriculas ducta.* Lin. Syst. Nat. Gmel. p. 156. Schreb. saeugth. p. 831. t. 225. B. Greyish-rufous Dormouse, whitish beneath, with a strait black stripe across the eyes to the ears.

THIS species is much allied to the preceding, but has a less sharpened visage, and a much shorter tail; and its general proportions bear a greater resemblance to those of the fat dormouse. Its length to the tail is about four inches, and the tail, about three inches. Its colour on the upper parts and tail is greyish ferruginous, and of the under parts yellowish white: the patch or black mark on each side the head is much narrower than in the preceding species, and extends only to the ears: the tail is very furry, the hair spreading as in that of a squirrel. It is said to be a native of Russia, Georgia, &c. inhabiting woods, &c.

COMMON DORMOUSE.

Myoxus Muscardinus. M. rufus, gula albicante, plantarum pollicibus muticis. Lin. Syst. Nat. Gmel. p. 156.

Rufous Dormouse, with whitish throat, and the thumbs of the hind-feet without claws.

Mus avellanarius. Lin. Syst. Nat. p. 83.

Mus avellanarum minor. Aldr. dig. 439. Jonst. Quadr. 168.

Dormouse or Sleeper. *Ray syn. Quadr. 220.*

Le Muscardin. Buff. 8. p. 193. pl. 26.

Dormouse. *Brit. Zool. 1. p. 95. Hist. Quadr. 2. p. 161. Edw. pl. 266.*

THE size of this animal is nearly equal to that of a mouse, but it is of a more plump or rounded form, and the nose is more obtuse in proportion : the eyes are large, black, and prominent ; the ears broad, thin, and semi-transparent : the fore-feet have four toes, and the hind-feet five, but the interior of these latter are destitute of nails : the tail is about two inches and a half long, and closely covered on all sides with hair, which is rather longer towards the tip than on the other parts : the head, back, sides, belly, and tail, are of a tawny red colour ; the throat white : the fur is remarkably soft, and the whole animal has a considerable degree of elegance in its appearance. It sometimes happens that the colour is rather brown than reddish.

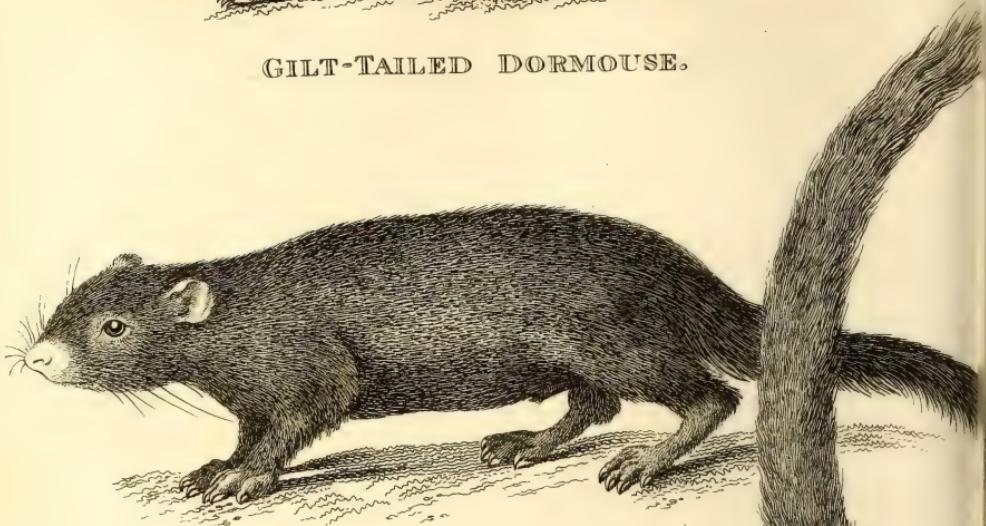
* Dormice, says Mr. Pennant, inhabit woods or very thick hedges ; forming their nests in the hollows of some low tree, or near the bottom of a close shrub. As they want much of the spright-

liness of the squirrel, they never aspire to the tops of trees, or attempt to bound from spray to spray. Like the squirrel, they form little magazines of nuts, &c. for their winter provision, and take their food in the same upright posture. The consumption of their hoard during the rigour of winter is but small, for they sleep most part of the time, retiring into their holes on the approach of winter, and, rolling themselves up, lie torpid during the greatest part of the gloomy season. Sometimes they experience a short revival in a warm sunny day; when they take a little food, and then relapse into their former state.

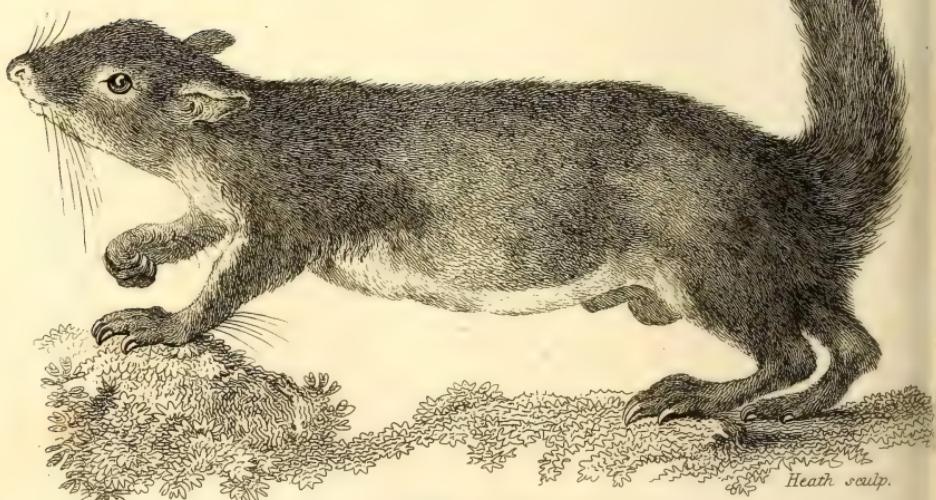
These animals seldom appear far from their retreats, or in any exposed situations; for which reason they seem less common in this country than they really are. They make their nest of grass, moss, and dead leaves. According to the Count de Buffon it consists of interwoven herbs, and is six inches in diameter, open only above, and is situated between the branches of hazel and brushwood. The number of young is generally three or four.



GILT-TAILED DORMOUSE.



GUERLINGUET. var.



GUERLINGUET.

Heath sculp.

GILT-TAILED DORMOUSE.

Myoxus Chrysurus. M. purpureo-ferrugineus, stria capitis longitudinali caudæque medietate postica luteis.

Purplish brown Dormouse, with the hind part of the tail and longitudinal stripe on the head gold-yellow.

Le Lerot à queue dorée. Buff. Suppl. 7. p. 283. pl. 72.

Hystrix chrysurus. Schreb. saeugth. suppl.

Gilt-tailed Dormouse. *Pennant Quadr. 2. p. 162.*

THIS singular species, though considered by its first describer, Mr. Allamand, as well as by Mr. Pennant in his History of Quadrupeds, as a species of Dormouse, is allied in perhaps an equal degree to the Porcupines, among which it is placed by Mr. Schreber. It is supposed to be a native of Surinam, and is remarkable for the beauty of its colours; being of a fine purplish brown above, rather paler beneath; the tail is brown at its base, black for half its length, and the remainder of a bright gold-yellow, and on the top of the head is a longitudinal stripe, of that colour. The head is large in proportion to the body; the eyes small; the ears moderately large, short, and rounded; the upper lip divided; the front teeth white and short; those of the lower jaw being the largest: on each side the nose are long vibrissæ or whiskers; the legs are short; the feet divided into four toes, with weak crooked claws; and in place of the thumb a small tubercle. On the hind part of the head, and along the back, are scattered several hairs much longer than the rest, and of a very different form and substance, being flat, stiff, and

rough to the touch : they seem to arise from small transparent sheaths, and their conformation is highly singular, each hair, or rather quill, being cylindric and very small near the body, growing flat towards the middle part, where it is half a line broad ; and thence gradually diminishing to a very fine point : along the middle runs a channel or gutter, which if examined with a glass, appears yellow, while the sides, which are elevated, are of a brown colour, and thus a sort of double reflexion of light takes place, causing the purplish tinge above mentioned : these singular hairs or quills become gradually smaller as they approach the sides of the body, and quite disappear towards the abdomen. It seems to be an animal formed for climbing trees, and from the description given above it will appear that Mr. Schreber's opinion is just, and that it should in reality be considered, notwithstanding its diminutive size, as a species of Porcupine. Its length, from nose to tail, is five inches, and of the tail six inches and nine lines.

GUERLINGUET.

Myoxus Guerlingus. *M. ferrugineus subtilis flavo-rufescens, cauda longa subdepressa attenuata.*

Ferruginous Dormouse, yellowish-rufous beneath, with long, subdepressed, tapering tail.

Le Grand Guerlinguet. *Buff. Suppl. 7. p. 261. pl. 65.*
Pennant Quadr. 2. p. 162.

THIS animal is described in the 7th supplemental volume of the Count de Buffon's Natural History, and is said to be of the size of a squirrel, but of a longer form, and of the colour mentioned in the specific character accompanying the present article. It is a native of Guiana, and resides on trees in the manner of a squirrel; feeding on fruits, &c. Its general residence is on palm trees. Its teeth resemble those of squirrels, and it has the same method of elevating its tail, which is longer than the body, and obscurely annulated with numerous alternate brown and yellowish bands, the tip itself being black. This animal measures between seven and eight inches to the tail, which is of equal length.

Var.?

SMALL GUERLINGUET.

Le Petit Guerliguet. *Buff. suppl. 7. p. 263. pl. 66.*

THIS, which is supposed by the author to be a variety of the preceding, resembles it in almost every particular except size, measuring only four

inches and three lines from nose to tail, which is but three inches and three lines in length. The colour of this kind is also less brown than the former, and has a cast of cinereous olive-colour on the upper parts. It may be doubted whether it does not constitute a distinct species from the former; but the full history of these animals does not yet appear to be clearly understood. Mr. Pennant places them in the genus Dormouse; and at present we cannot do better than follow the example of that judicious author, who is emphatically termed by Dr. Pallas *Primus post immortalem Rajum Anglorum solidus Zoologus*. The Guerlinguets are said to be easily tamed, and to produce two young at a birth, which they bring forth in the hollows of trees.

AFRICAN DORMOUSE.

Myoxus Africanus. *M. griseus subtus albidus, linea superciliari & laterali albidis, cauda medio nigra, unguibus palmarum longissimis.*

Ferruginous-grey Dormouse, whitish beneath, with a white superciliary and lateral line, tail black in the middle, and claws on the fore-feet very long.

Earless Dormouse. *Pennant Quadr. 2. p. 161.*

THIS species was communicated to Mr. Pennant by Sir Joseph Banks, and is said to be found about the mountains of Sneeburgh, above 800 miles above the Cape of Good Hope. Its size is that of a squirrel, but its shape much broader and

flatter: its colour on the upper parts pale ferruginous; on the under whitish: above each eye is a white line, and on each side the body another: the head is flat; the nose obtuse; the eyes full and black; the whiskers long; the upper lip bifid; the auricles scarce apparent; the toes long and distinct; the knob on the fore-feet large, and the claws very long: the tail black in the middle, and hoary on each side. Whether it be really a species of Dormouse may perhaps be doubted.

DIPUS. JERBOA.

Generic Character.

<i>Dentes Primores utrinque duo.</i>	<i>Front-teeth two above and below.</i>
<i>Pedes anteriores brevissimi; posteriores longissimi.</i>	<i>Fore-legs very short; hind-legs very long.</i>
<i>Claviculae perfectæ.</i>	<i>Clavicles in the skeleton.</i>

COMMON JERBOA.

Dipus Sagitta. D. cauda longissima, apice subpennata nigro-alba, pedibus posticis longissimis tridactylis. Pall. Glir. p. 87. and p. 306. Mus.

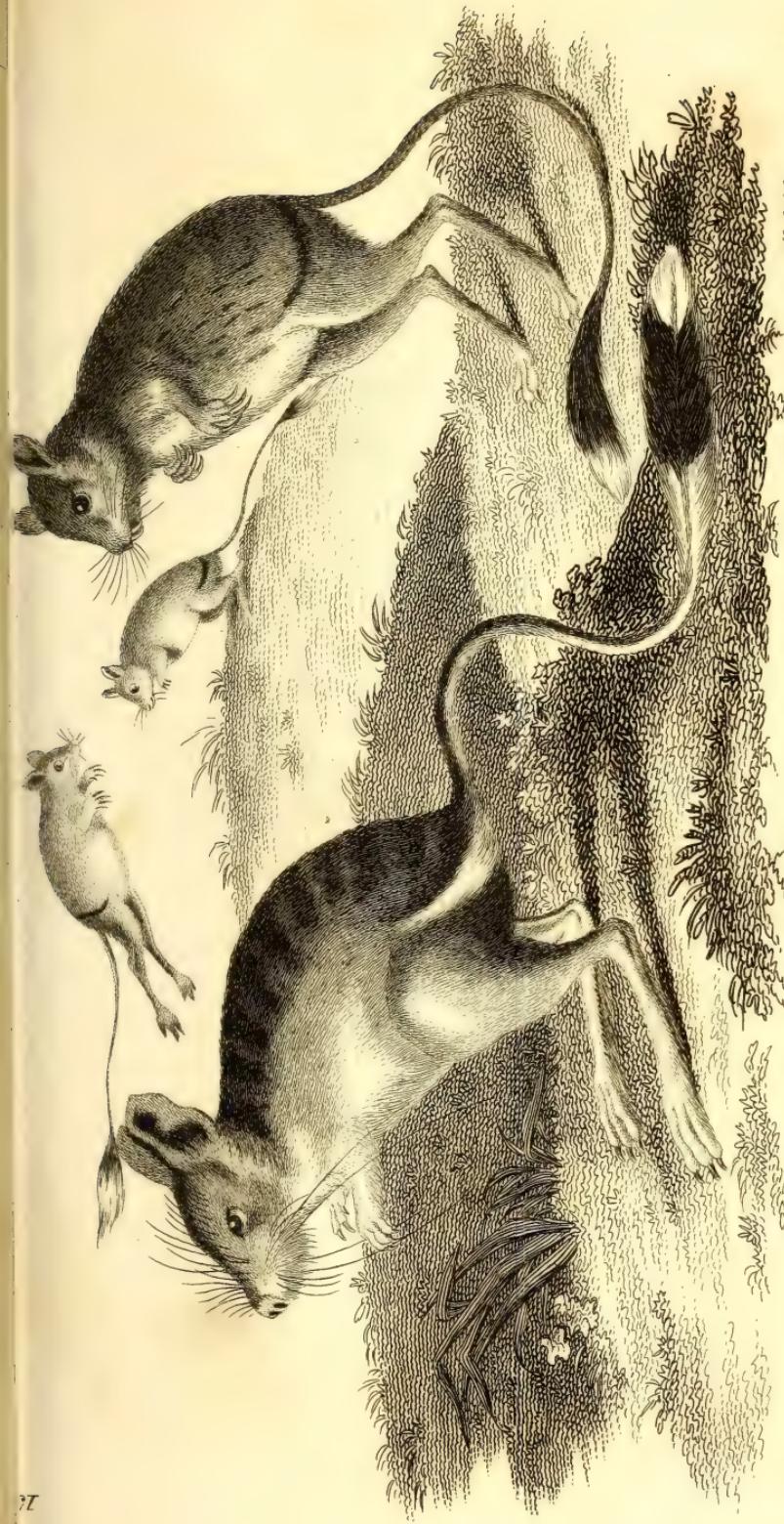
Pale-brown Jerboa, white beneath, with extremely long tridactyle hind feet, and very long tail with subpennated black-and-white tip.

Egyptian Jerboa. *Pennant Quad. 2. p. 164. Edw. pl. 219.*

THIS is the species which seems to have been known to the ancients under the name of *μυς δίπος*, or two-footed mouse, and which is represented, though with no great degree of exactness, on some coins of Cyrene, where it was anciently found in great abundance, and where it still continues. It is by some supposed to be the *Saphan* of the sacred writings. It is about the size of a rat, and is of a very pale tawny-brown above, and white beneath; and across the upper part

COMMON JERBOA.

Hatch Cap.



of the rump runs an obscure dusky band, which is probably not a permanent character, since it appears to be more or less distinct in different individuals. The head is short; the ears thin, broad, upright, and rounded: the eyes large, round, and dark coloured: the fore legs about an inch long, with five toes to each foot, the inner toe very small, but furnished with a sharp crooked claw, like the rest: the hind legs are extremely long, thin, sparingly covered with short hair, and very much resemble those of a bird: the hind feet have three toes each, the middle of which is somewhat longer than the rest, and all are furnished with sharp and strong claws: there is also a very small spur or back toe, with its corresponding claw; but this spur or back toe is so small, that it seems to have been generally overlooked by the describers of the animal; and it is highly remarkable, that neither Edwards nor Pennant, who both examined this species in a living state, nor even Dr. Pallas, whose accuracy in description is extreme, and who examined a great number of specimens, make the least mention of this part; nor does any vestige of it appear in the figure given by Dr. Pallas of the skeleton. We must, therefore, suppose either that the animal varies in this respect, or that it may perhaps constitute a sexual distinction, and may consequently be found only on some individuals. It may also occur in those which inhabit Barbary, Egypt, and Arabia; but not in those which are found in the sandy deserts between the Tanais

and the Volga, where Dr. Pallas examined his specimens; for this animal, like the Alagtaga or next described species, appears to inhabit very distant and dissimilar regions, occurring not only in many parts of Africa, but in the eastern parts of Siberia, &c. &c. It also appears from the observations of Dr. Pallas, that the two species, viz. the Common Jerboa and the Alagtaga, never inhabit the same spots, or intermix, but keep perfectly distinct or separate from each other.

The usual length of the common Jerboa, from nose to tail, is about seven inches and a quarter: the tail is about ten inches long, of a form rather inclining to square than cylindric, and of the same colour with the body, but terminated by an elegant, flattish, oval tuft of black hair, with a white tip. On each side the nose are situated several very long hairs or whiskers, as is usual in most animals of this tribe: the cutting-teeth are sharp and strong, and resemble those of a rat. In its attitudes and manner of progression this animal resembles a bird; generally standing, like the Kangaroo, on its hind feet, and leaping with much celerity, and to a great distance: but sometimes it sets its fore feet to the ground for a moment or two, and then recovers its former attitude. It principally uses the fore legs in feeding; pulling to its mouth the ears of corn, and various other vegetable substances on which it feeds. It inhabits subterraneous holes, which it either prepares itself, or finds ready excavated, in the dry, stony, and sandy deserts in which it resides.

During the day it commonly remains in its hole ; coming out at night for food and exercise. On the approach of cold it is said to grow torpid for some time, reviving on the change of weather.

This animal has frequently been brought into Europe, and in a state of confinement has been known to burrow almost through a brick wall. It has been well figured by Edwards, who did not observe any appearance of a spur or back toe. It is possible, however, that from its minuteness it might have escaped his attention.

The measurements of this species are differently given by authors, and it appears clearly to vary somewhat in size in different countries ; those of Siberia, described by Dr. Pallas, being smaller than those of Africa ; and, after all, it is not impossible that they may in reality be distinct, though so nearly resembling each other as to make the distinction very difficult : in Dr. Pallas's specimens a white transverse band runs across the upper part of the thighs, whereas in that of Edwards a black or dusky band passes across the lower part of the back, without any appearance of the white one. It is difficult to determine whether the kind described and figured by Mr. Bruce should be considered as a variety of the present species or of the Alagtaga ; since it agrees with the Common Jerboa, in having the black dorsal band or crescent, while, on the contrary, in the number of its toes on the hind-feet it seems to differ from both ; the author expressly declaring

that there are four toes forwards, exclusive of a very short one or spur behind.

Mons. Sonnini, in his Egyptian travels, assures us, that he never was able to find any difference either in the form or colour of the Egyptian Jerboa. Mons. Sonnini considers the Jerboa as constituting a link between quadrupeds and birds. In this idea he is by no means singular; the same sentiment naturally suggesting itself to the mind of every philosophical observer. Mons. Sonnini adds, that though the transition from quadrupeds to birds has not yet been investigated, we have nevertheless reason to consider the connexion as existing. We have the beginning of it in the Jerboa, and the last link of it in the Bat. We have every reason to believe, that the series of gradations will develope itself in proportion as good observers shall carry their researches into countries the natural history of which is still unexplored*.

M. Sonnini describes the Egyptian Jerboa as follows:

" Its size is nearly equal to that of a large rat: its head is broad, large in proportion to the body, the upper part flat, and of a light fawn-colour, striped with black: the upper jaw projects beyond the lower: they are both provided with two incisores; the upper ones broad, square, flat, and

* The Platypus or Duck-Bill, from New Holland, is a striking instance of the truth of this remark.

divided lengthwise by a groove in the middle; the lower ones longer, convex externally, pointed at their extremity, and bent inwards: the muzzle is short, wide, and obtuse; a number of stiff hairs grow out on each side, and form long whiskers: the nose is white, bare, and cartilaginous: the iris of its large and projecting eye is brown: the ears long, large, and covered with hair, so short that they appear naked except on very close inspection: externally they are white in the lower part, and grey upwards: the middle, as well as the sides of the head, is of a very light fawn-colour, mixed with grey and black: they entirely surround the meatus auditorius for about a third of their length, so that they exactly resemble the larger end of a cone: this conformation must increase the animal's faculty of hearing, and is particularly well calculated to defend the inner part of the organ from the extraneous substances that might lodge there: the body is short; well provided with long, soft, silky hair: that which covers the back and sides is of an ash-colour throughout almost the whole of its length, and of a light fawn-colour where it approaches the points, which are black; but as the ash-coloured part is not visible, it may be said that the fur is fawn-coloured, with blackish zigzag stripes: these tints, which are somewhat dusky, form an agreeable contrast with the fine white of the belly: the fore-legs are so short that they scarcely extend beyond the hair: they are white, and have five toes; the inner one of which is short, rounded at

the end, and has no nail : the four other toes, the second outer one of which is the longest, are long, and armed with great hooked nails : the heel is very high, and the middle of the foot is naked and of a flesh-colour. These fore-feet are of no use to the animal in walking, but serve him only to lay hold of his food, and to carry it to his mouth, as also to dig his subterraneous abode. The hind legs are covered with long hair, fawn-coloured and white : its long feet are almost entirely bare, especially on the outside, which must necessarily be the case ; since the animal, whether in motion or at rest, constantly leans on that part. These feet, so exceedingly long, have each three toes ; the middle one something longer than the other two : they are all provided with nails, which are short, but broad and obtuse : they have also at the heel a kind of spur, or rather a very small rudiment of a fourth toe, which gives the Jerboa of Egypt some resemblance to the Alagtaga of Tartary described by Gmelin in the Petersburgh Transactions, and which part probably escaped Hasselquist, as well as many others. The toes and the heel are furnished below with long grey hairs tinged with yellow, except that at the origin of the toes, which is of a blackish cast : the nails, both of the fore and hind feet, are of a dirty white. According to Hasselquist the tail of the Jerboa is three times the length of the body ; I never found it, however, much more than half that length : it scarcely exceeds the circumference of a goose-quill, but is of a quadrangular and not

a round shape: it is of a deeper grey above than below, and is furnished with short hair as far as the extremity, which ends in a tuft of long silky hair, half black and half grey."

The following is, according to Mons. Sonnini, the average size of the Egyptian Jerboa: it was taken from female specimens, because they happened first to be met with, but M. Sonnini assures us, that the difference of size between the sexes is but very slight.

"Length of the body, from the tip of the nose to the origin of the tail, five inches six lines.

"That of the head, measured in a strait line from the tip of the nose to the nape of the neck, one inch eight lines.

"Breadth of the muzzle at its extremity, four lines. That of the opening of the mouth, measured from one angle of the jaw to the other, three lines and a half. The upper jaw projects beyond the under three lines and a quarter.

"Length of the upper teeth, two lines: of the under, three.

"Distance between the nostrils, one line: between the tip of the nose and the anterior angle of the eye, ten lines. Between the posterior angle of the eye to the ear, two lines and a half. Between the two angles of the eye, five lines. Distance between the anterior angles of the eyes, measured in a strait line, one inch and half a line.

"Length of the ears, one inch and six lines: breadth of the ears at bottom, five lines. Distance between the ears, nine lines.

“ Length of the tail, eight inches six lines : thickness of the tail, at its origin, two lines.

“ Total length of the fore-legs, one inch seven lines : that of the great toe, one line and a half ; of the second, including the nail, three lines.

“ Total length of the hind-legs, six inches and two lines : that of the middle toe, including the nail, ten lines : that of the spur, one line.”

“ The females have eight nipples, the position of which is remarkable : they are situated more externally than in other quadrupeds : the first pair is beyond the bend of the shoulders ; and the last is rather under the thigh than under the belly ; the two other pairs, being on the same line, are consequently placed rather under the flanks than under the body.

“ The Jerboa appears to be a prolific animal ; for it is exceedingly numerous in Arabia, Nubia, Egypt, and Barbary. During my stay in, or rather during my excursions in Egypt, I opened several Jerboas. My principal aim was to ascertain that they had only one stomach, and consequently could not possess the power of ruminating. This was an answer to one of the questions that Michaelis, professor at Gottingen, had addressed to the travellers sent to the East by the king of Denmark, viz. *Whether the Jerboa was a ruminating animal?* A question arising from the same mistake which had occasioned the confounding the Jerboa with the *Daman Israel*, or *Saphan* of the Hebrews.

“ The sand and ruins that surround modern

Alexandria are much frequented by the Jerboas. They live in society, and in burrows, which they dig with their teeth and nails. I have even been told, that they sometimes make their way through the soft stone which is under the stratum of sand. Though not absolutely wild, they are very shy, and upon the least noise, or the sight of any object, retire precipitately to their holes. They can only be killed by surprise. The Arabs contrive to take them alive, by stopping up all the avenues to their burrows except one, by which they force them to come out. I never ate any: their flesh indeed is said to be not very palatable, though it is not despised by the Egyptians. Their skin, covered with soft and shining hair, is used as a common fur.

" In Egypt I kept six of these animals for some time in a large iron cage: the very first night they entirely gnawed through the upright and cross pieces of wood, and I was obliged to have the inside of the cage lined with tin. They ate rice, walnuts, and all kinds of fruit. They delighted in being in the sun; and when taken into the shade, huddled together, and seemed to suffer from the privation of heat. It has been said that the Jerboas sleep by day, and never in the night; but, for my part, I observed quite the contrary. In a state of liberty they are found round their subterraneous habitations in open day, and those which I kept were never more lively nor awake than in the heat of the sun. Although they have a great deal of agility in their motions, they

seem to be of a mild and tranquil disposition. Mine suffered themselves to be touched without difficulty; and there was neither noise nor quarrel among them, even when taking their food. At the same time they testified neither joy, fear, nor gratitude: their gentleness was neither amiable nor interesting: it appeared to be the effect of cold and complete indifference, bordering on stupidity. Three of these animals died successively, before my departure from Alexandria. I lost two others during a somewhat stormy passage to the isle of Rhodes, when the last, owing to the negligence of the person to whose care it was committed, got out of its cage and disappeared. I had a strict search made for it, when the vessel was unloaded, but without effect: it had, no doubt, been killed by the cats."

Mons. Sonnini seems inclined to think that the Alagtaga or Tartarian Jerboa described by Gmelin in the Pittsburgh Transactions, is no other than the Egyptian Jerboa, notwithstanding its different residence.

ALAG'TAGA



ALAGTAGA.

Dipus Jaculus. *D. cauda longissima apice pennata nigro-alba, pedibus posticis maximis pentadactylis.* Pall. Glir. p. 87. and 275. Mus.

Pale-brown Jerboa, white beneath, with extremely long pentadactyle hind-feet, and very long tail with subpennated black-and-white tip.

Siberian Jerboa. Pennant Quadr. 2. p. 166.

Alagtaga. Buff. 13. p. 141. Schreb. saeugth. p. 842.

In its general appearance this species perfectly resembles the common or Egyptian Jerboa, but is considerably larger, though there appear to be permanent varieties or races which are, on the contrary, much smaller than the common species. It is principally distinguished by the remarkable character of the hind feet, each of which has a pair of very conspicuous spurs or additional toes, situated at some distance above the front toes, and furnished with sharp claws.

In the Leverian Museum is a very fine specimen of this animal, which has been figured in Mr. Pennant's History of Quadrupeds. The colour of the Siberian Jerboa or Alagtaga is nearly the same as that of the Egyptian; but there is no appearance of the dusky band across the lower part of the back, or any transverse undulations; the whole upper parts being of a pale yellowish fawn-colour, and the under parts white. Its length is about eight inches, and the tail ten. It is found, according to Dr. Pallas, from the Caspian sea to the river Irtish, but is no where very

frequent. It inhabits dry, sandy, and gravelly soils.

Of this species there are two supposed varieties, agreeing in form with the above mentioned, but differing in size, and in some degree in colour; but the differences are not such as to justify our considering them as specifically distinct. The first of these varieties is the *Middle Siberian Jerboa*, which is of the size of a rat, and has the thighs crossed by a white line; and a whitish zone or circle surrounds the nose. It is found in the eastern deserts of Siberia and Tartary, beyond the lake Baikal. It also occurs in Barbary and Syria, and extends, according to Dr. Pallas, even as far as India. The other variety is called by Mr. Pennant the *Pygmy Siberian Jerboa*. It agrees in form with the other, but has no white circle round the nose, and has a smaller tuft to the tail, the end of which is just tipped with white. In size it is far inferior to the *middle* variety. It is said to inhabit the same places with the large or first described kind. All these agree in their manners, burrowing in hard, clayey ground, not only in high and dry spots, but even in low and salt places; digging their holes with great celerity with their fore feet and teeth; thus forming oblique and winding burrows, of some yards in length, and ending in a large hole or receptacle by way of nest, in which are deposited the herbs, &c. on which they feed. They are said to wander about chiefly by night. They sleep rolled up, with the head between the thighs;

they are extremely nimble, and on the approach of danger spring forward so swiftly, that a man well mounted can scarcely overtake them. They are said to be particularly fond of the roots of tulips, and some other bulbous-rooted plants. They are supposed to sleep during the winter in the manner of Dormice.

The large, or middle variety of this species appears to be figured by Aldrovandus, under the title of *Cuniculus Indicus Utias dictus*.

It is possible that Mr. Bruce's description may refer to the same animal, since he expressly affirms, that the hind feet have four toes besides a spur. His figure, however, does not represent this particular distinctly, and is besides marked across the lower part of the back by the dusky band or crescent, which generally appears on the Common Jerboa.

Mr. Bruce tells us, that there is little variety in the animal, either in size or colour; but that towards Aleppo they have broader noses than the African ones; that their bodies are thicker, and their colour lighter.

"The Arabs of the kingdom of Tripoli (says Mr. Bruce) make very good diversion with the Jerboa, in training their greyhounds, which they employ to hunt the Gazel or Antelope, after instructing him to turn himself by hunting this animal. The Prince of Tunis, son of Sidi Younis, and grandson of Ali Bey, who had been strangled by the Algerines when that capital was taken, being then an exile at Algiers, made me a present

of a small greyhound, which often gave us excellent sport. It may perhaps be imagined that a chace between these two creatures could not be long : yet I have often seen, in a large inclosure, or court-yard, the greyhound employ a quarter of an hour before he could master his nimble adversary : the small size of the creature assisted him much ; and had not the greyhound been a practised one, and made use of his feet as well as his teeth, he might have killed two Antelopes in the time he could have killed one Jerboa."

I must not omit to add, that Mr. Bruce cannot allow the Jerboa to be the *Saphan* of the sacred writings.

CAPE JERBOA.

Dipus Cafer. *D. spadiceus, subtus subcinereus, palmis pentadactylis, plantis tetradactylis, cauda villosissima apice nigra.*

Ferruginous Jerboa, pale ash-coloured beneath, with pentadactyle fore-feet, tetradactyle hind-feet, and very villose tail tipped with black.

Jerboa Capensis. *Mill. cim. phys. p. 62. t. 31.*

Grand Gerbo. *Buff. Suppl. 6. p. 260. pl. 42.*

Cape Jerboa. *Pennant Quadr. 2. p. 170.*

THIS is by far the largest of all the Jerboas, and is a native of the mountainous country to the north of the Cape of Good Hope. Its length from nose to tail is one foot two inches ; of the tail near fifteen inches. The head is broad ; the muzzle somewhat sharp ; and the upper jaw longer



CAPE JERBOA.

than the lower. The general colour of the animal is a pale ferruginous above, and pale ash-colour beneath. The nose is black and bare to some little distance up the front: the ears large: the whiskers long and black: the tail is of the same colour with the body for about half its length; the remainder blackish, and extremely villous or full of hair. It is an animal of great strength and activity, and will spring to the distance of twenty or thirty feet at once. When eating, it sits upright in the manner of a squirrel. It burrows in the ground, like the smaller kind of Jerboas, with great ease and expedition; having very strong and long claws, five in number, on the fore feet: those on the hind feet are rather short, and are four in number.

This animal is among the late accessions to Natural History. It seems to have been first figured in the miscellaneous plates of Mr. Millar. A figure also occurs in the sixth supplemental volume of the Count de Buffon's History of Quadrupeds. It is called by the Dutch colonists, at the Cape, by the name of *Springen Haas* or *Jumping Hare*.

TORRID JERBOA.

Dipus Meridianus. *D. palmis subtetradactylis, plantis pentadactylis, cauda concolore.* Lin. Syst. Nat. Gmel. p. 159.

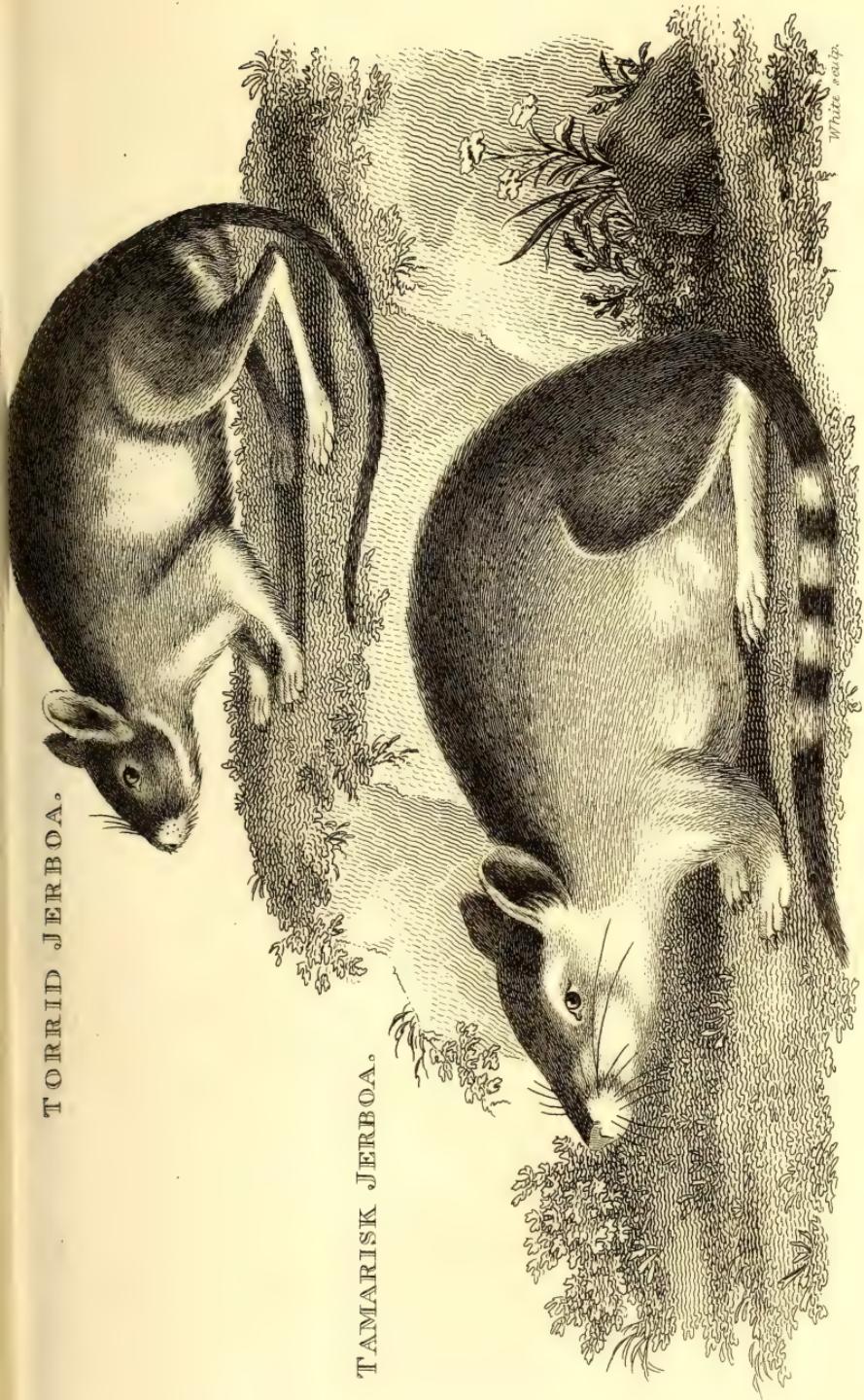
Yellowish-brown Jerboa, white beneath, with subtetradactyle fore-feet, pentadactyle hind-feet, and tapering tail of the same colour with the body.

Mus longipes. Lin. Syst. Nat. p. 84. Pall. Glir. p. 88.

Torrid Jerboa. Pennant Quadr. 2. p. 171.

THIS species, according to Dr. Pallas, was first figured by Seba, whose specimen appears to have been not fully grown. Specimens were brought to Dr. Pallas in the year 1770, which were taken on the borders of the sandy desert of *Naryn*, in $46\frac{1}{2}$ north latitude. The burrows or passages which they had formed in the dry soil, had a triple entrance, and were about an ell deep in the ground. The size of this species is between that of a rat and a field-mouse; and notwithstanding the great length of the hind legs, it does not leap, like the rest of the Jerboas, but runs in the manner of the rat tribe; and it seems to be on this account that Mr. Pennant has ranked it under his division of Jerboid Rats, rather than among the true Jerboas. The length from nose to tail is rather more than four inches; and of the tail rather more than three: the nose is blunt; the mouth placed far beneath; the upper lip bifid; the ears large and rounded; the fore legs short, with four toes, and a tubercle in place of a thumb: the hind legs long and naked: the toes long and slender; the exterior one shorter than

TORRID JERBOA.



TAMARISK JERBOA.

the rest. The colour of the animal is brown above, and white beneath; the colours separated along the sides by a yellowish line.

TAMARISK JERBOA.

Dipus Tamaricinus. *D. palmis subtetradactylis, plantis pentadactylis, cauda obsolete annulata.* Lin. Syst. Nat. Gmel. p. 159.

Yellowish-brown Jerboa, white beneath, with subtetradactyle fore-feet, pentadactyle hind-feet, and tapering tail obscurely annulated with brown.

Mus tamaricinus. Pall. Glir. p. 88. t. 19.

Tamarisk Rat. Pennant Quadr. 2. p. 175.

THIS species, which was first discovered by Dr. Pallas, is about the size of the brown rat. It is an inhabitant of the most southern parts of the Caspian deserts, and probably of the warmer parts of Asia. It delights in low grounds and salt marshes, and burrows under the roots of the tamarisk-bushes. Each burrow has two entrances, and is very deep. The animal comes out by night to feed, and makes its principal repast on succulent maritime plants, as the *Salsola*, &c. which in the salt deserts it inhabits are very plentiful. The head of this species is oblong; the whiskers large; the nose blunt; and the nostrils covered by a flap: the eyes large; the ears large, oval, and naked: the space round the nose and eyes, and beyond the ears, white: the sides of the head and neck cinereous: the back and sides yellowish grey: the tips of the hairs brown: the

breast and belly white : the tail ash-coloured, and annulated more than half way from the base with rings of brown : the hind legs are long in proportion to the fore legs ; and the feet are longitudinally black beneath : on the fore feet is a warty tubercle in place of the thumb. The length from nose to tail is about six inches ; the tail not quite so long.

CANADIAN JERBOA.

Dipus Canadensis. D. fusco-flavescens, subtus albidus, palmis tetradactylis, plantis pentadactylis, cauda longa subnuda murina.
Yellowish-brown Jerboa, whitish beneath, with the fore-feet tetradactylous, the hind-feet pentadactylous ; the tail long and mouse-like.

Dipus palnis tetradactylis, plantis pentadactylis, cauda annulata undique setosa.

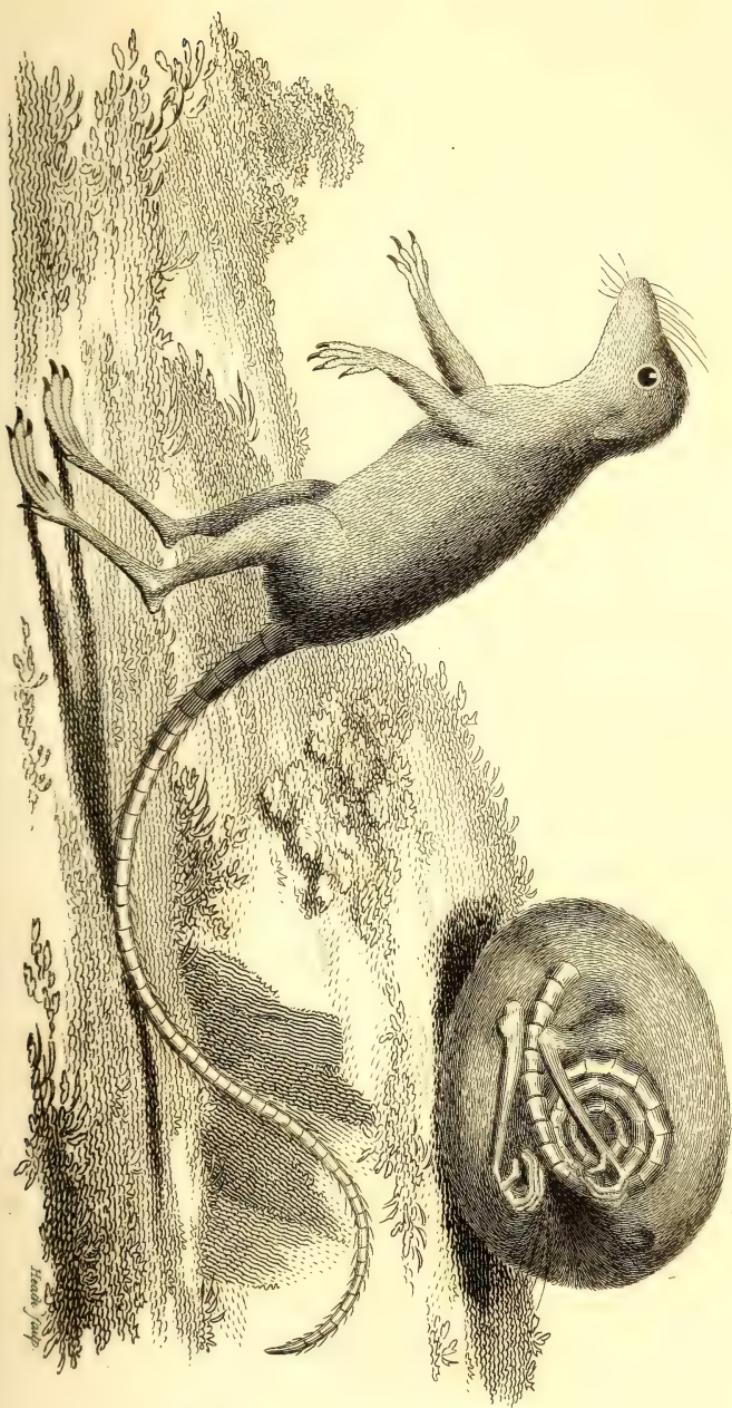
Jumping Mouse of Canada. *Lin. Trans.* 4. p. 157. *pl. 8.*

Canada Rat. *Pennant Quadr.* 2. p. 172.

THIS minute species, which is figured on the annexed plate in its natural size, and represented both in its active and torpid state, is a native of Canada, and appears to have been first discovered by General Davies, who had an opportunity of examining it during his residence at Quebec, and who has described it in the fourth volume of the Transactions of the Linnæan Society.

The description is as follows :

" As I conceive there are very few persons, however conversant with natural history, who may have seen or known that there was an ani-



CANADIAN JERBOA, *nat. size.*

Hand Jap.

mal existing, in the coldest parts of Canada, of the same genus with the Jerboa, hitherto confined to the warmer climates of Africa, I take the liberty of laying before this society the following observations, accompanied by a drawing of an animal of that kind, procured by myself, in the neighbourhood of Quebec, during my last residence in that country. The specimens from which I made the drawing are now in my collection. With respect to the food, or mode of feeding, of this animal, I have it not in my power to speak with any degree of certainty, as I could by no means procure any kind of sustenance that I could induce it to eat; therefore, when caught, it only lived a day and a half. The first I was so fortunate to catch was taken in a large field near the falls of Montmorenci, and by its having strayed too far from the skirts of the wood allowed myself, assisted by three other gentlemen, to surround it, and after an hour's hard chace, to get it unhurt, though not before it was thoroughly fatigued, which might in a great measure accelerate its death. During the time the animal remained in its usual vigour, its agility was incredible for so small a creature. It always took progressive leaps of from three to four, and sometimes of five yards, although seldom above twelve or fourteen inches from the surface of the grass; but I have frequently observed others in shrubby places, and in the woods, among plants, where they chiefly reside, leap considerably higher. When found in such places it is impossible to take them,

from their wonderful agility, and their evading all pursuit by bounding into the thickest part of the cover they can find. With respect to the figure given of it in its dormant state, I have to observe, that the specimen was found by some workmen, in digging the foundation for a summer-house in a gentleman's garden, about two miles from Quebec, in the latter end of May, 1787. It was discovered enclosed in a ball of clay, about the size of a cricket-ball, nearly an inch in thickness, perfectly smooth within, and about 20 inches under ground. The man who first discovered it, not knowing what it was, struck the ball with his spade, by which means it was broken to pieces, or the ball would have been presented to me. The drawing will perfectly shew how the animal is laid during its dormant state. How long it had been under ground, it is impossible to say; but as I never could observe these animals in any parts of the country after the beginning of September, I conceive they lay themselves up some time in that month, or beginning of October, when the frost becomes sharp; nor did I ever see them again before the last week in May, or beginning of June. From their being enveloped in balls of clay, without any appearance of food, I conceive they sleep during the winter, and remain for that term without sustenance. As soon as I conveyed this specimen to my house, I deposited it, as it was, in a small chip box, in some cotton, waiting with great anxiety for its waking; but that not taking

place at the season they generally appear, I kept it until I found it begin to smell: I then stuffed it, and preserved it in its torpid position. I am led to believe its not recovering from that state, arose from the heat of my room during the time it was in the box, a fire having been constantly burning in the stove, and which in all probability was too great for its respiration."

This animal, in the last edition of Mr. Pennant's History of Quadrupeds, is referred to the genus *Mus*, and is described under the name of the *Canada Rat*.

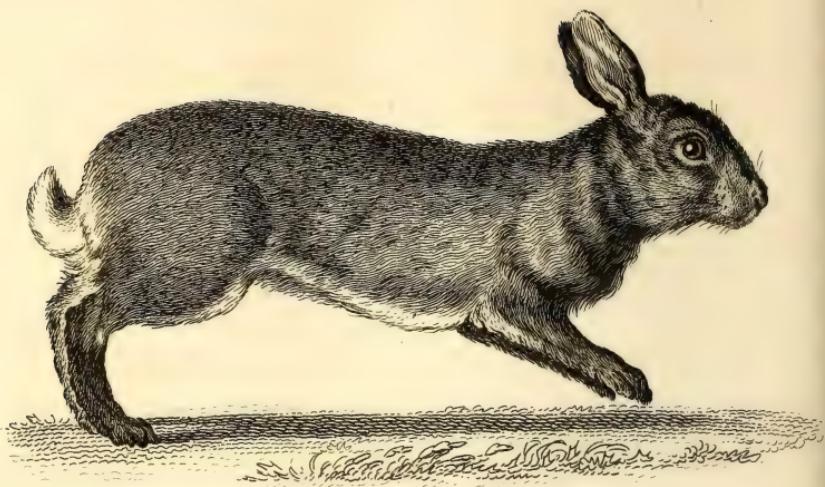
LEPUS. HARE.

Generic Character.

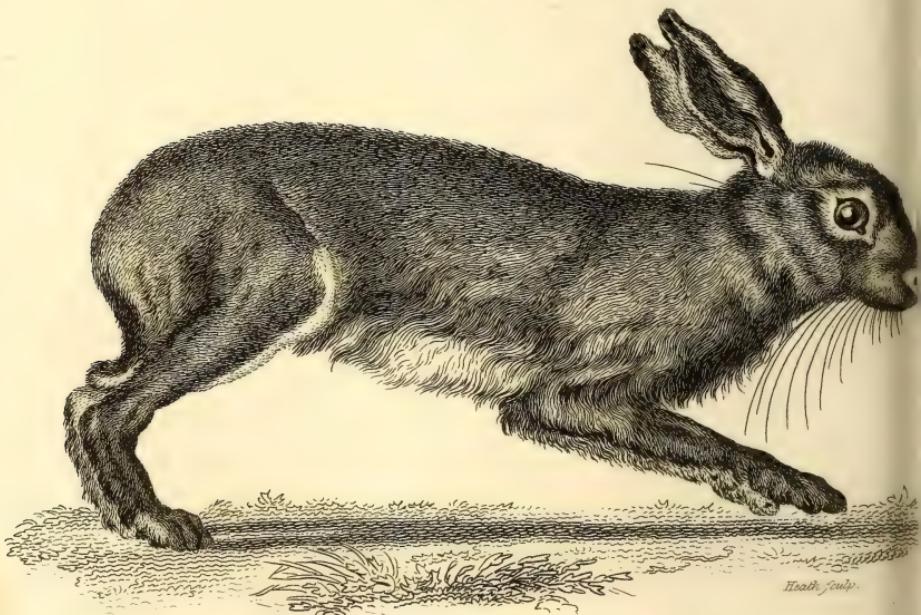
Dentes Primores utrinque duo; superiores duplicati, interioribus minoribus.

Front-teeth two both above and below: the upper pair duplicate; two small interior ones standing behind the exterior.

THIS genus, when considered with anatomical exactness, exhibits particularities of structure, deviating somewhat from that of the *Glires*, and making an indistinct approach to the *Pecora* or Ruminants. It has even been supposed that the common hare actually ruminates; an opinion owing not only to the peculiar motions of the mouth, which present an obscure appearance of rumination, but to the structure of the stomach, which is marked as it were into two regions by a particular fold or ridge. Other singularities relative to internal formation may be met with in the works of comparative anatomists.



RABBIT.



HARE.

COMMON HARE.

Lepus Timidus. *L. cauda abbreviata, auriculis apice nigris, capite longioribus.* *Lin. Syst. Nat. Gmel. p. 160.*

Subferruginous-brown short-tailed Hare, with ears longer than the head, and tipped with black.

Lepus. *Gesn. Quadr. 69.* *Aldr. dig. 247.* *Raj. Quadr. 204.*

Le Lievre. *Buff. 6. p. 246. pl. 38.*

Common Hare. *Pennant Quadr. 2. p. 98.*

THE Hare is an animal so familiarly known as to supersede the necessity of any very minute description. It is a native not only of every part of Europe, but of almost every part of the old continent. It may perhaps be doubted whether it be an aboriginal native of any part of America.

The favourite residence of the Hare is in rich and somewhat dry and flat grounds, and it is rarely discovered in very hilly or mountainous situations. It feeds principally by night, and remains concealed during the day in its form, beneath some bush, or slight shelter.

The swiftness of this animal is proverbial, and on account of the conformation of its legs, the hinder of which are longer than the fore, it is observed to run to most advantage on slightly ascending ground.

The general length of the Hare is about two feet; the colour a subferruginous grey, with the chin and belly white, the throat and breast ferruginous, and the tips of the ears blackish: the tail is black above, and white below: the feet are covered beneath as well as above with fur; the in-

side of the mouth is also coated with short hair : the upper lip is divided ; the eyes are large, yellowish-brown, and are said to be constantly open even during sleep.

The hare is a very prolific animal, generally producing three or four young at a time, and breeding several times in a year. The young require the assistance of the parent but for a short time, and in about three weeks are able to provide for themselves : they do not remove to any great distance from each other, but continue in the same neighbourhood for a considerable time. The Hare feeds on various vegetables, but is observed to prefer those of a milky and succulent quality. It also occasionally feeds on the bark of trees, as well as on the young shoots of various shrubs, &c.

The nature of the soil in which the Hare resides and feeds, is observed to influence in a considerable degree the colour and constitution of the animal. Those which feed in elevated situations are larger and darker than those which reside in the plains.

The Hare is an animal proverbially timid, and flies, if disturbed when feeding, by the slightest alarm ; but when seated in its form, will allow itself to be approached so near as to be reached by a stick ; seeming to be fascinated as it were by fear, and instead of endeavouring to fly, continues to squat immovable, with its eyes fixed on its enemy. It is necessary, however, in order to conduct this manœuvre, to approach in a gradual and circling manner.

The Hare, though so nearly allied to the Rabbit as to make the general descriptive distinction not very easy, is yet of different habits and propensities, and never associates with the latter animal. If taken very young, the Hare may be successfully tamed, and in that state shews a considerable degree of attachment to its benefactors, though it continues shy to those whose presence it has not been accustomed to. Mr. White, in his *History of Selbourne*, relates an instance which happened in that village, of a young leveret suckled and nursed by a Cat, which received it very early under her protection, and continued to guard it with maternal solicitude till it was grown to a considerable size. Mons. Sonnini, in his notes to Buffon's *Natural History*, assures us that he himself kept a tame Hare, which used generally to repose itself by the fire in winter between two large Angora cats, and was also on terms of equal friendship with a hound. In this state of domesticity the hare, like other quadrupeds, is subject to a prolongation of the teeth, which exceed their proper bounds, unless the animal be furnished with some hard substances on which to exercise them at intervals. This extraordinary prolongation of the teeth, as Dr. Pallas has justly observed, furnishes an irrefragable argument against Mr. Hunter's doctrine with respect to the growth of these organs.

A most singular variety of this animal is sometimes found, which is furnished with rough and slightly branched horns, bearing a considerable

resemblance to those of a roebuck. This particularity, as strange as it is uncommon, seems to imply a kind of indistinct approach in this animal to the order *Pecora*. Accounts of horned hares may be found, not only in the writings of Gesner and Aldrovandus, but of many other naturalists, and there seems to be no reason for doubting the reality of the phænomenon. Dr. Grew, in his *Museum Regalis Societatis*, mentions a pair of these horns, which were at that time in the collection of the Royal Society, and Mr. Schreber has lately figured a pair in his work on quadrupeds.

The Hare is a short-lived animal, and is supposed rarely to exceed the term of seven or eight years. Its voice, which is scarce ever heard but in the distress of sudden surprise, is a cry not much unlike that of an infant. The Hare is preyed upon by foxes, wolves, eagles, hawks, kites, &c. &c. which, together with the more destructive pursuits of mankind, contribute to thin the number of these animals, which from their prolific nature would otherwise multiply to the most extravagant degree; since, according to Buffon, in some districts appropriated to the pleasures of the chace, not less than four or five hundred have been destroyed in a single day!

It may be proper to add, that in very severe winters, and especially in those of the more northern regions, the hare becomes entirely white, in which state it is liable to be mistaken for the following species.

VARYING HARE.

Lepus Variabilis. *L. cauda abbreviata, excepto auricularum capite breviorum apice nigro hyeme totus albus.* Lin. Syst. Nat. Gmel. p. 161.

Tawny-grey short-tailed Hare (white in winter), with ears shorter than the head, and tipped with black.

Varying Hare. Pennant Quadr. 2. p. 100.

Lepus variabilis. Pall. Glir. p. 1.

THIS species is an inhabitant of the loftiest alpine tracts in the northern regions of the globe; occurring in Norway, Lapland, Russia, Siberia, and Kamtschatka; and in our own island on the Alps of Scotland. The same species is also found to extend to America, appearing in some parts of Canada. In its general appearance it bears an extreme resemblance to the common hare, but is of smaller * size, and has shorter ears and more slender legs. Its colour in summer is a tawny grey, in winter entirely white; except the tips of the ears, which are black: the soles of the feet are also black, but are very thickly covered with a yellowish fur. This animal is observed to confine itself altogether to elevated situations, and never to descend into the plains, or to mix with the common hare †. The change of colour commences in the month

* Dr. Pallas, on the contrary, represents it as larger than the common hare: it, therefore, appears to vary in size in different countries; and the Scottish variety is smaller than the Russian and Siberian.

† Yet, according to Dr. Pallas, a Hybrid variety is sometimes evidently produced between this species and the common hare.

of September, and the grey or summer coat reappears in April; but in the very severe climate of Siberia it continues white all the year round. It has been sometimes found entirely coal-black; a variety which is also known to take place occasionally in the common hare. The varying hare sometimes migrates in order to obtain food in severe seasons. Troops of five or six hundred have been seen to quit in this manner the frozen hills of Siberia, and to descend into the plains and woody districts, from which they again return in spring to the mountains.

AMERICAN HARE.

Lepus Americanus. *L. cauda abbreviata, pedibus posticis corpore dimidio longioribus, auricularum caudæque apicibus nigris.* *Lin.*
Syst. Nat. Gmel. p. 162.

Tawny-grey short-tailed Hare, white beneath, with the hind legs longer than the body, and the ears and tail tipped with grey.

American Hare. *Forst. Phil. Trans.* vol. 62. p. 376. *Pennant*
Quadr. 2. p. 102. *Catesb.* app. 27.

THIS animal is not much superior in size to a rabbit; measuring about eighteen inches. Its colour nearly resembles that of the common hare, to which it seems much allied; but the fore legs are shorter, and the hind ones longer in proportion. The belly is white; the tail black above and white beneath; the ears tipped with grey, and the legs of a pale ferruginous colour. It is said to inhabit all parts of North America; and

in the more temperate regions retains its colour all the year round, but in the colder parts becomes white in winter; when the fur grows extremely long and silvery; the edges of the ears alone retaining their former colour. It is said to be extremely common at Hudson's Bay, where it is considered as a highly useful article of food. It breeds once or twice a year, producing from five to seven at a time. It is not of a migratory nature, but always continues to haunt the same places, taking occasional refuge under the roots of trees, or in the hollows near their roots.

BAIKAL HARE.

Lepus Tolai. *L. cauda abbreviata, auricularum margine summo nigro.* Lin. Syst. Nat. Gmel. p. 162. Pall. Glir. p. 17, t. 4. f. 2.

Pale-brown short-tailed Hare, with the upper edges of the ears black.

Tolai. Buff. 15. p. 138.

Baikal Hare. Pennant Quadr. 2. p. 104.

THIS is a somewhat larger species than the common hare, which it pretty much resembles as to colour and general appearance, but has a longer and smaller head, with a thicker nose in proportion: the tail is longer in proportion than in the rabbet, and shorter than in the common hare, and is black above and white below: the end of the nose and the eyes are bordered with whitish hair, and the upper edges of the ears are black.

the throat* and under parts are white, and the feet yellowish. This animal is an inhabitant of open hilly places in Dauria and Mongolia, and is said to extend as far as Tibet. In the colour of its flesh it agrees with the rabbet, but differs both from that animal and the hare in its manners; neither burrowing in the ground, like the former, nor running far when pursued, like the latter; but instantly taking refuge in the holes of rocks. It is called by the Mongols by the name of Tolai. The fur is said to be very indifferent, and of no esteem as a commercial article.

RABBET.

Lepus Cuniculus. *L. cauda abbreviata subconcolore, auriculis apice atris, cruribus posticis truncō brevioribus.* Lin. Syst. Nat. Gmel. p. 163.

Short-tailed brown Hare, with the tips of the ears black, and the hind legs shorter than the body.

Cuniculus. Plin. Gesn. Aldr. Raj.

Le Lapin. Buff. 6. p. 303. pl. 50, &c.

Rabbit. Pennant Quadr. 2. p. 103.

THE Rabbet bears a very strong general resemblance to the Hare, but is considerably smaller, and its fore feet are furnished with sharper and longer claws in proportion; thus enabling it to burrow in the ground, and to form convenient retreats, in which it conceals itself by day, and, like

* Mr. Erxleben describes it with the throat black.

the hare, comes out chiefly by night and during the early part of the morning to feed. Its colour, in the wild state, is a dusky brown, paler or whitish on the under parts, and the tail is black above and white below. In a domestic state the animal varies into black, black-and-white, silver-grey, perfectly white, &c. &c.

The Rabbet is a native of most of the temperate and warmer parts of the old continent, but is not found in the northern regions, and is not originally a native of Britain, but was introduced from other countries. Its general residence is in dry, chalky, or gravelly soils, in which it can conveniently burrow. It is so prolific an animal that it has been known to breed seven times in a year, and to produce no less than eight young each time. It is, therefore, not surprising that in some countries it has been considered as a kind of calamity, and that various arts of extirpation have been practised against it.

The difference between the Rabbet and the Hare, though known from daily habit and inspection, is yet by no means easily described in words; and it is a curious fact, that the attempts at a specific character by Linnæus, in the earlier editions of the *Systema Naturæ*, are remarkable for their want of precision. In the second edition of that work he thus distinguishes the Rabbet: *Lepus cauda abrupta, pupillis rubris. Hare with abrupt tail, and red pupils.* Red eyes are, however, only seen occasionally in domestic rabbits of a perfectly white colour. In the twelfth

edition of the *Systema Naturæ* he attempts to distinguish the Rabbet thus: *L. cauda abbreviata, auriculis denudatis. Hare with abbreviated tail, and naked ears.* But, as Mr. Barrington, whose remarks on this subject may be found in the *Philosophical Transactions*, has well observed, this latter distinction will be found equally to fail.

The criterion proposed by Mr. Barrington is the proportional length of the hind legs compared with those of the hare; for “if the hind legs of an European Hare are measured from the uppermost joint to the toe, the number of inches will turn out to be just half the length of the back from the rump to the mouth, the tail not being included. The hind legs of the Rabbet being measured in the same manner, and compared with the back, are not much more than one third.” Mr. B. adds, that the fore legs of the Rabbet are also shorter than those of the hare. Mr. Barrington’s criterion, as the reader will observe by turning to the specific character, has been adopted by modern naturalists.

The strange variety, or rather, if such really existed, distinct species, figured in Mr. Pennant’s *Synopsis*, and repeated in his *History of Quadrupeds*, under the title of the *Hooded Rabbet*, and taken from a drawing by Edwards, in the British Museum, appears such an outrageous violation of probability as to justify our supposing it, with Dr. Pallas, to be in reality no other than an Angora Rabbet, in the state in which it sometimes appears when casting its fur, which, as Daubenton

has observed, becomes clotted and tangled here and there, as in a specimen figured in Buffon, where a mass of the fur hangs down on one side in such a manner as to resemble an additional leg. Edwards's drawing above mentioned is called, in the memorandum annexed to it, *A Rabbet from Moscovy*, and is described as follows :

" This Rabbit is about the bigness of our largest tame Rabbits in England. It has a double skin all over the back, so that it can roll itself up in a round form, putting its head under the upper skin, and its feet into a pouch under the throat. It has also a flap of thick wool which it places its feet upon when it sits. It has a small hole in the skin on the back, which gives light to the eye when the head is under the skin. It was shewn to the Royal Society of London in the year 1736, and acknowledged to be natural."

In the same volume of drawings is a figure of the skin itself, which is evidently no other than the ragged spoil of some long-haired Rabbet ; the head and feet in the preceding figure (which represents the animal in its supposed complete state) being evidently added by Edwards and coloured brown, like those of a common Rabbet, though the enveloping skin itself is white.

BRASILIAN HARE.

Lepus Brasiliensis. L. auritus, collari albo, cauda nulla. Lin.

Syst. Nat. Gmel. p. 164. Pall. Glir. p. 30.

Tailless brown Hare, white beneath, with a white collar round the neck.

Cuniculus Brasiliensis Tapeti. Marcgr. bras. 223.

Brasilian Hare. *Pennant Quadr. 2. p. 107.*

THE Brasilian Hare is nearly of the same size as the common hare: it is also similar in colour, but of a somewhat darker cast: the chin and under parts are white; the face reddish, and a white ring surrounds the neck; the ears are very large; the eyes black; and the tail is entirely wanting. This animal is said to inhabit the woods of Brasil, and is esteemed as an article of food. The white ring round the neck is not found to be an universal character, but is sometimes wanting. Its native name among the Brasilians is *Tapeti*, and among the Mexicans *Citli*.

CAPE HARE.

Lepus Capensis. L. cauda longitudine capitis, pedibus rubris.

Lin. Syst. Nat. Gmel. p. 164.

Brown Hare, with reddish legs, and tail the length of the head.

Cape Hare. *Pennant Quadr. 2. p. 105.*

THE Cape Hare is about the size of a Rabbet, and is a native of the northern parts above the Cape of Good Hope. Its colour on the upper parts is similar to that of a common Hare, but the cheeks and sides are cinereous, and the under parts and legs ferruginous: the tail is bushy, of a pale ferruginous colour, and carried in an upright direction: the ears are long, broad in the middle, naked, and rose-coloured on the outside and covered with short ash-coloured hair within. It is called about the Cape by the name of Mountain Hare, inhabiting only rocky mountainous regions, and running, when disturbed, into the fissures of the rocks.

VISCACCIA.

Lepus Viscaccia. L. cauda elongata setosa. Lin. Syst. Nat.

Gmel. p. 160.

Brownish Hare, with long bristly tail.

Vischacha. *Nieremb. Hist. Nat. p. 161.*

Viscaccia. *Pennant Quadr. 2. p. 106.*

THIS species is said to have the general appearance of a Rabbet, but has a long bushy and

bristly tail, like that of a fox, which the animal also resembles in colour: the fur on all parts, except the tail, is soft, and is used by the Peruvians in the manufacture of hats: it was also used by the ancient Peruvians for the fabric of garments, worn only by persons of distinction. In its manners this animal resembles the rabbet, burrowing under ground, and forming a double mansion, in the upper of which it deposits its provisions, and sleeps in the other. It appears chiefly by night, and is said to defend itself when attacked by striking with its tail.

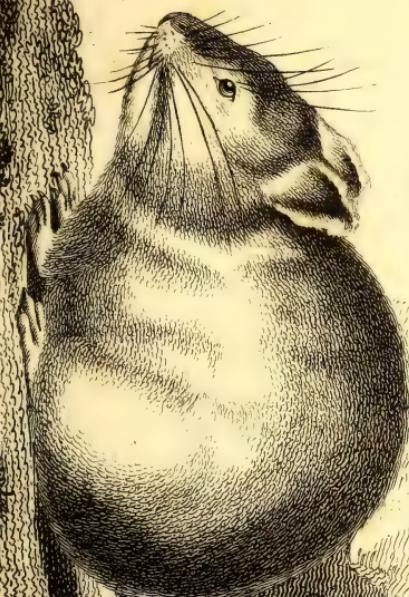
ALPINE HARE.

Lepus Alpinus. *L. ecaudatus rufescens, auriculis rotundatis plantisque fuscis.* Lin. Syst. Nat. Gmel. p. 165. Pall. Glir. p. 45. t. 2.

Tailless ferruginous Hare, with rounded ears, and brownish feet.
Alpine Hare. Pennant Quadr. 2. p. 107.

THIS is a very different species from the Alpine Hare described by Mr. Pennant in the *British Zoology*, which is no other than the *Varying Hare*. The Alpine Hare is a far smaller animal, scarce exceeding a Guinea-Pig (*Cavia Cobaya*) in size, and measuring only nine inches in length. Its colour is a bright ferruginous grey, paler beneath: the head is long, and the ears short, broad, and rounded. It appears to have been first described by Dr. Pallas, who informs us that it is a native of the Altaic mountains, and extends to the Lake

O GOTO NA HARE.



ALPINE HARE.



CALLING HARE.



Baikal, and even to Kamtschatka, inhabiting rough, woody tracts amidst rocks and cataracts, and forming burrows beneath the rocks, or inhabiting the natural fissures, and dwelling sometimes singly, and sometimes two or three together. They are also said to be occasionally found in the hollows of large trees, which have been thrown down by the violence of storms in those lofty regions. In general they confine themselves to their holes in bright weather, coming out only in the evening and during the night; but in dull weather are frequently seen in the day-time, running about among the rocks, and frequently uttering a sort of whistle or chirping sound, not unlike that of a sparrow. In their manners they greatly resemble some of the Marmots or Hamsters, preparing, during the autumn, a plentiful assortment of the finest herbs and grasses, which they collect in company, and after drying with great care in the sun, dispose into heaps of very considerable size, for their winter support, and which may always be distinguished, even through the deep snow, having the appearance of so many hay-ricks in miniature, and being often several feet in height and breadth. These little ricks, raised by their industrious labours, are often found of great service to the adventurous hunters of Sables, whose horses would perish for want, were it not for the supplies which they thus occasionally discover. The Alpine Hare varies in size according to the different regions in which it

is found, being largest about the Altaic mountains, and smaller about Lake Baikal, &c.

OGOTONA HARE.

Lepus Ogotona. *L. ecaudatus griseo-pallidus, auriculis ovalibus subacutis concoloribus.* Lin. Syst. Nat. Gmel. p. 166. Pall. Glir. p. 59. t. 3.

Tailless pale-brown Hare, with oval subacute ears of the same colour.

Ogotona Hare. Pennant Quadr. 2. p. 109.

THIS animal, says Dr. Pallas, is called by the Mongolians by the name of Ogotona, and is an inhabitant of rocky mountains, or sandy plains, burrowing under the soil, or concealing itself under heaps of stones, and forming a soft nest at no great depth from the surface. It wanders about chiefly by night, and sometimes appears by day, especially in cloudy weather. In autumn it collects heaps of various vegetables for its winter food, in the same manner as the Alpine hare, before described, disposing them into neat hemispherical heaps of about a foot in diameter. These heaps are prepared in the month of September, and are entirely consumed by the end of winter.

The Ogotona Hare is about six inches or somewhat more in length, and is of a pale brown colour above, and white beneath: on the nose is a yellowish spot, and the outsides of the limbs

and space about the rump is of the same colour. It is entirely destitute of a tail.

CALLING HARE.

Lepus Pusillus. *L. ecaudatus, fusco griseoque mixtus, auriculis subtriangulis, albo marginatis.* *Lin. Syst. Nat. Gmel. p. 164.*
Pall. Glir. p. 31. t. 1.

Tailless grey-brown Hare, with subtriangular ears edged with white.

Calling Hare. *Pennant Quadr. 2. p. 111.*

In its form this species extremely resembles the Ogotona hare, but is smaller, measuring near six inches, but weighing only from three ounces and a quarter to four and half, and in winter two and a half. The head is somewhat longer than is usual in this genus, and thickly covered with fur even to the tip of the nose : the ears are large and rounded ; the legs very short ; the feet furred beneath ; and the fur on the whole animal is very soft, long, smooth, and of a brownish lead-colour, with the hairs tipped with black : on the sides of the body a yellowish tinge prevails. It is an inhabitant of the south-east parts of *Russia*, and about all the ridge of hills spreading southward from the *Uralian* chain ; as well as about the *Irtish*, and the west part of the *Altaic* chain. It is an animal of a solitary disposition, and is very rarely to be seen, even in places it most frequents. It commonly chuses its residence in some dry gentle declivity, where the turf is firm and covered with bushes,

and is therefore mostly found on the western side of hills, where it forms an obliquely descending burrow, the entrance of which is scarcely more than two inches in diameter. The animal generally betrays its place of residence by its voice, which is heard after sunset and early in the morning, and much resembles that of a quail; and is repeated at intervals, three, or four, or six times: it is heard to a surprising distance, considering the small size of the animal, and that there is nothing peculiar in the structure of its organs which can account for so powerful a tone. In cloudy weather this note is heard by day as well as by night, and is commonly mistaken by the country people for that of some bird.

These little animals grow tame almost as soon as caught, and in the course of a day become quite familiar; being of an extremely gentle disposition: they sleep but little, and that with open eyes, like the common hare: they generally sit with body drawn up, as in the figure, but when sleeping, they stretch themselves out with their belly on the ground and their ears pressed close to the head. The animal, when sitting in its general or contracted form, just fills the hollow of the hand. Its pace is a kind of leaping motion, but not very quick; nor does it run well, on account of the shortness of the legs. It may be fed during a state of captivity, on the leaves of various shrubs and plants. It produces five or six young, which are at first of a blackish colour, and blind and naked; but on

the eighth day begin to be furred, to see, and to creep about. This species is not observed to undergo any change of colour during the winter.

MINUTE HARE.

Lepus Minimus. *L. cauda abbreviata, auriculis pilosis concoloribus.* Lin. Syst. Nat. Gmel. p. 163.

Short-tailed brown long-nosed Hare, with small, hairy, pointed ears.

Cuy Hare. Pennant Quadr. 2. p. 106.

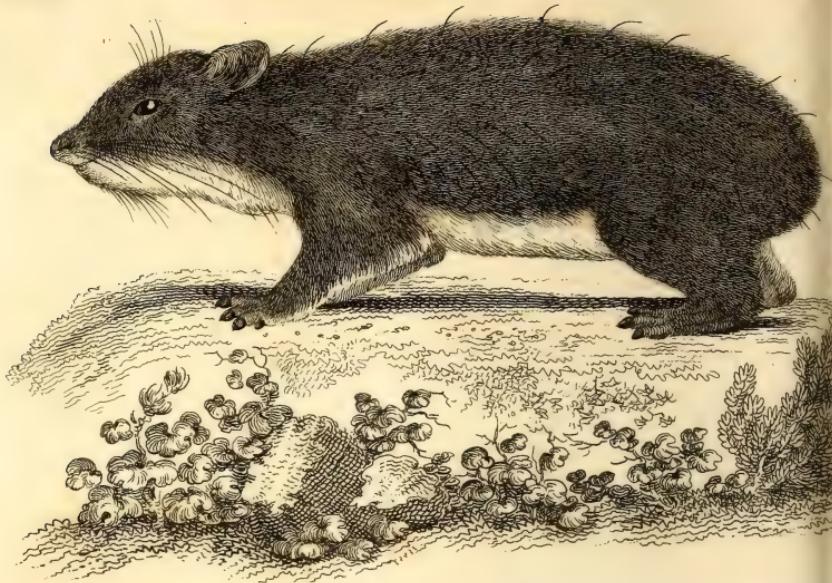
THIS is by far the smallest of the whole genus, scarce exceeding the meadow mouse (*Mus arvalis*) in size. It is a native of *Chili*, where it is said to be much esteemed as a delicate food, and is often kept in a domestic state. The body is of a conoid shape, the ears small, pointed, and covered with hair: the nose long; the tail so short as to be scarce visible. This animal varies in colour (at least when in a domestic state), being either brown, white, or spotted. It produces about six or eight young at a time, and is said to breed almost every month. No figure of this animal appears to have yet been given, nor is its description by Molina and others quite so full and circumstantial as might be wished. It is said to be called in *Chili* by the name of *Cuy*.

HYRAX. HYRAX.

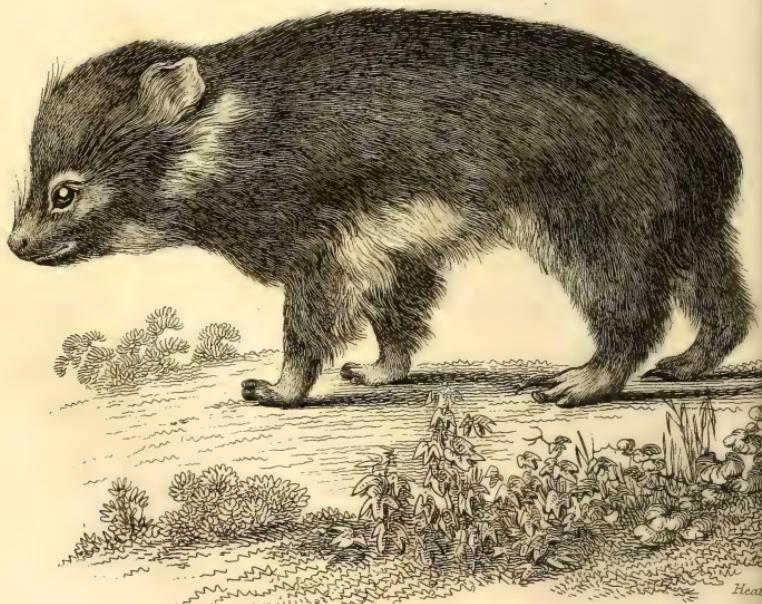
Generic Character.

<i>Dentes Primores superiores duo, lati, distantes.</i>	<i>Front-teeth in the upper jaw two, broad, somewhat distant.</i>
<i>Inferiores quatuor, contigui, lato-plani, bis crenati.</i>	<i>In the lower jaw four, broad, flat, twice crenated.</i>
<i>Molares magni, ubique quatuor.</i>	<i>Grinders large, four on each side in both jaws.</i>
<i>Palmae digitis quatuor.</i>	<i>Fore-feet with four toes.</i>
<i>Plantæ digitis tribus.</i>	<i>Hind-feet with three toes.</i>
<i>Cauda nulla.</i>	<i>Tail none.</i>
<i>Claviculae nullæ.</i>	<i>Clavicles none.</i>

THE genus Hyrax is distinguished from all the rest of the Glires by the remarkable circumstance of having four teeth in the lower jaw instead of two: these lower teeth are also of a different structure from the upper, being broad, short, and crenated or denticulated at the top: the upper teeth in this genus are also less sharp or pointed than in the rest of the Glires. In other particulars the genus Hyrax seems most nearly allied to that of Cavia.



SYRIAN HYRAX.



CAPE HYRAX.

CAPE HYRAX.

Hyrax Capensis. *H. palmarum unguibus planis, plantarum unico subulato.* Lin. Syst. Nat. Gmel. p. 166.

Grey-brown Hyrax, paler beneath, with flat nails on the fore feet, and a single sharp curved claw on the hind feet.

Cavia Capensis. Pall. misc. 34. t. 3. spicil. 2. p. 22. t. 2.

Marmotte du Cap de Bonne Esperance. Buff. Suppl. 3. p. 177. pl. 29.

Cape Cavv. Pennant Quadr. 2. p. 96.

THIS is an animal of which the natural history and manners have but lately been well understood. It is a native of mountainous situations about the Cape of Good Hope; residing in the hollows of rocks, and leaping with great agility about the prominences of the irregular regions it frequents, though its general or walking pace is not remarkably quick. Its size is nearly that of a rabbet, and in colour it much resembles that animal, but is whitish beneath. It is of a thick form, with short limbs, of which the hinder are longer than the fore, and is perfectly destitute of a tail. The head is rather small; the nose divided by a furrow; the ears short and rounded; the eyes large and black; the fore feet divided into four lobes or toes of a soft or pulpy nature, and furnished with flattish, rounded nails: the hind feet are of similar structure, but have only three lobes, of which the interior is furnished with a sharp crooked claw, while the others have nails similar to those on the fore feet.

This animal is said to be known at the Cape by the name of *rock badger*, but Mr. Allamand observes, that this is an improper name, since the structure of its feet evidently shews that it has no power of digging or burrowing. It is a diurnal animal, and by night retires into the cavities of rocks, &c.

The first figure of this species, published by Dr. Pallas in his *Spicilegia Zoologica*, and from thence copied into the third supplemental volume of the Count de Buffon's Natural History, was executed from a very indifferent drawing, and exhibits the animal beyond measure gross and corpulent. More expressive representations have since been given, and from one of these the figure in the present work is copied.

This animal appears to be easily tamed, and in that state is observed to be remarkably cleanly, and of a lively and active disposition; leaping almost as readily and with as much security as a cat. This is contrary to the character given of the animal from the specimen represented by Dr. Pallas and others; but the individual then described appears to have lost a part of its natural habits from the confinement in which it was kept, and the manner in which it was fed; and consequently misled the describers of the day into a wrong idea of its nature and manners; and this, among many other instances, may serve to shew how little dependence is to be placed on descriptions drawn up from an individual specimen, transported from its native country into a widely

different climate, and having no power of exerting with freedom its natural habits and propensities.

The Cape Hyrax feeds on vegetables only, and is said to prepare a kind of nest or bed of dried leaves, grasses, &c. in the cavities in which it resides. Its voice is a shrill repeated squeak.

SYRIAN HYRAX.

Hyrax Syriacus. H. plantis tridactylis, unguibus omnibus sub-aequalibus. Schreb. saeughth. p. 923.

Rufous-grey Hyrax, white beneath, with tridactyle feet and nearly equal claws.

Ashkoko. *Bruce Trav. append. p. 139. pl. 23.*

Bristly Cavy. *Pennant Quadr. 2. p. 92.*

THIS species seems to have been first clearly and fully described by Mr. Bruce, in the appendix to his celebrated Abyssinian Travels. If the description appears in some parts rather too minute, let it be considered, that Mr. B. was treating of an animal almost unknown to European naturalists, and which, in consequence, seemed to demand a peculiar degree of exactness.

"This curious animal," says Mr. Bruce, "is found in Ethiopia, in the caverns of the rocks, or under the great stones in the Mountain of the Sun, behind the queen's palace at Koscam. It is also frequent in the deep caverns in the rock in many other parts of Abyssinia. It does not burrow, or make holes, as the rat and rabbet, Nature

having interdicted him this practice by furnishing him with feet, the toes of which are perfectly round, and of a soft, pulpy, tender substance; the fleshy parts of the toes project beyond the nails, which are rather broad than sharp, much similar to a man's nails ill grown, and these appear rather given him for the defence of his soft toes, than for any active use in digging, to which they are by no means adapted.

" His hind foot is long and narrow, divided with two deep wrinkles, or clefts, in the middle, drawn across the centre, on each side of which the flesh rises with considerable protuberancy, and it is terminated by three claws; the middle one is the longest. The fore foot has four toes, three disposed in the same proportion as the hind foot; the fourth, the largest of the whole, is placed lower down on the side of the foot, so that the top of it arrives no farther than the bottom of the toe next to it. The sole of the foot is divided in the centre by deep clefts, like the other, and this cleft reaches down to the heel, which it nearly divides. The whole of the fore foot is very thick, fleshy, and soft, and of a deep black colour, altogether void of hair, though the back or upper part of it is thick-covered like the rest of its body, down to where the toes divide, there the hair ends, so that these long toes very much resemble the fingers of a man.

" In the place of holes, it seems to delight in less close, or more airy places, in the mouths of caves, or clefts in the rock, or where one pro-

jecting, and being open before, affords a long retreat under it, without fear that this can ever be removed by the strength or operations of man. The Ashkoko are gregarious, and frequently several dozens of them sit upon the great stones at the mouth of caves, and warm themselves in the sun, or even come out and enjoy the freshness of the summer evening. They do not stand upright upon their feet, but seem to steal along as in fear, their belly being nearly close to the ground, advancing a few steps at a time, and then pausing. They have something very mild, feeble, and timid, in their deportment; are gentle and easily tamed, though, when roughly handled at the first, they bite very severely.

“ This animal is found plentifully on Mount Libanus. I have seen him also among the rocks at the Pharan Promontorium, or Cape Mahomet, which divides the Elanitic from the Heroopolitic Gulf, or Gulf of Suez. In all places they seem to be the same; if there is any difference it is in favour of the size and fatness which those in the Mountain of the Sun seem to enjoy, above the others. What is his food I cannot determine with any degree of certainty. When in my possession, he ate bread and milk, and seemed to be rather a moderate than voracious feeder. I suppose he lives on grain, fruit, and roots. He seemed too timid and backward in his own nature to feed upon living food, or catch it by hunting.

“ The total length of this animal, as he sits, from the point of his nose to the extremity of his

body is seventeen inches and a quarter. The length of his snout, from the extremity of the nose to the occiput, is three inches and three eighths. His upper jaw is longer than his under; his nose stretches half an inch beyond his chin. The aperture of the mouth, when he keeps it close, in profile, is little more than an inch. The circumference of his snout around both his jaws is three inches and three eighths; and round his head, just above his ears, eight inches and five eighths: the circumference of his neck is eight inches and a half, and its length one inch and a half. He seems more willing to turn his body altogether than his neck alone. The circumference of his body, measured behind his fore legs, is nine inches and three quarters, and that of his body, where greatest, eleven inches and three eighths: the length of his fore leg and toe is three inches and a half. The length of his hind thigh is three inches and one eighth, and the length of his hind leg to the toe taken together, is two feet two inches: the length of the fore foot is one inch and three eighths; the length of the middle toe six lines, and its breadth six lines also. The distance between the point of the nose and the first corner of the eye is one inch and five eighths; and the length of his eye, from one angle to the other, four lines. The difference from the fore angle of his eye to the root of his ear is one inch and three lines, and the opening of his eye two lines and a half. His upper lip is covered with a pencil of strong hairs

for mustachoes, the length of which are three inches and five eighths, and those of his eyebrows two inches and two eighths. He has no tail, and gives at first sight the idea of a rat, rather than of any other creature. His colour is a grey mixed with a reddish brown, perfectly like the wild or warren rabbet. His belly is white, from the point of the lower jaw, to where his tail would begin, if that he had one. All over his body he has scattered hairs, strong and polished like his mustachoes ; these are for the most part two inches and a quarter in length. His ears are round, not pointed. He makes no noise that ever I heard, but certainly chews the cud*. To discover this was the principal reason of my keeping him alive : those with whom he is acquainted he follows with great assiduity. The arrival of any living creature, even of a bird, makes him seek for a hiding-place ; and I shut him up in a cage with a small chicken, after omitting to feed him a whole day : the next morning the chicken was unhurt, though the Ashkoko came to me with great signs of having suffered with hunger. I likewise made a second experiment, by inclosing two smaller birds with him for the space of several weeks : neither were these hurt, though both of them fed, without impediment, of the meat that was thrown into his cage, and the smallest of

* This particular seems very doubtful, and may probably be owing to the peculiar motions of the mouth, resembling those of the hare, which has also been supposed by some to ruminate.

these, a titmouse, seemed to be advancing in a sort of familiarity with him, though I never saw it venture to perch upon him: yet it would eat frequently, and, at the same time, of the food upon which the Ashkoko was feeding; and in this consisted chiefly the familiarity I speak of, for the Ashkoko himself never shewed any alteration of behaviour upon the presence of the bird, but treated it with a kind of absolute indifference. The cage indeed was large, and the birds having a perch to sit upon in the upper part of it, they did not annoy one another.

“ In Amhara this animal is called **Ashkoko**, which I apprehend is derived from the singularity of those long herinaceous hairs, which, like small thorns, grow about his back, and which in Amhara are called **Ashok**. In Arabia and Syria he is called Israel’s Sheep, or **Gannim Israel**, for what reason I know not, unless it is chiefly from his frequenting the rocks of Horeb and Sinai, where the children of Israel made their forty years’ peregrination; perhaps this name obtains only among the Arabians. I apprehend he is known by that of **Saphan** in the Hebrew, and is the animal erroneously called by our translators **Cuniculus**, the rabbet or coney.”

HUDSON'S BAY HYRAX.

Hyrax Hudsonius. *H. cinereo-fuscus pilis apice albidis, palmis plantisque tetradactylis.*

Cinereous-brown Hyrax, with the hair whitish at the tips, and four toes on all the feet.

Tailless Marmot. *Pennant Quadr. 2. p. 137.*

THIS was first described by Mr. Pennant, and is in the Leverian Museum. Its colour is a cinereous brown, with the ends of the hairs white. It is a native of Hudson's Bay. Its size is nearly that of a common Marmot: the two upper teeth are moderately large, and shaped like those of the Cape Hyrax: the four lower are very strong, rather long than broad, and are very abruptly truncated, without any appearance of denticulations: the feet are tetradyctylous; of a similar form to those of the Cape Hyrax, but have rounded claws on all the toes. Nothing particular is known of the manners or natural history of this species.

To be added to the Genus *Cavia*.—Page 16.

PATAGONIAN CAVY.

Cavia Patachonica. C. subcaudata griseo-ferruginea, subtus albida, macula femorali utrinque alba, uropygio nigro.

Ferruginous-grey Cavy, whitish beneath, with extremely short naked tail, large white patch on each thigh, and black rump.

Patagonian Cavy. *Pennant Quadr. 2. p. 91.*

Hare. *Narborough's Voy. to Magell. p. 33.*

THIS remarkable species, of which a fine specimen occurs in the Leverian Museum, is a native of Patagonia, where it is said to be by no means uncommon. In size it considerably exceeds a Hare, and, according to Mr. Pennant, has been sometimes found to weigh more than twenty-six pounds. Its colour on the upper parts resembles that of a Hare; but the under parts are whitish, the breast and sides tinged with ferruginous: on each thigh is a large oval white patch, and the rump or region round the tail is black: the ears are long, rather broad, and sharp-pointed. On each side the nose is a tuft of short soft hair, exclusive of the long vibrissæ or whiskers. The legs are long; the claws long, strait, sharp, and black: they are four in number on the fore feet, and three on the hind. The tail is extremely short, as in the *Aguti*, being a mere naked stump or process. This animal is said to be an excellent article of food, the flesh being very white and delicate. It is called by Sir John Narborough, who seems to have been its first discoverer, by the title of a Hare.



PATAGONIAN CAVY. from Leverian Museum.

GENERAL ZOOLOGY

— or —

SYSTEMATIC NATURAL HISTORY

— by —

GEORGE SHAW, M.D. F.R.S.&c.

WITH PLATES

from the first Authorities and most select specimens

Engraved principally by

M^R. HEATH.

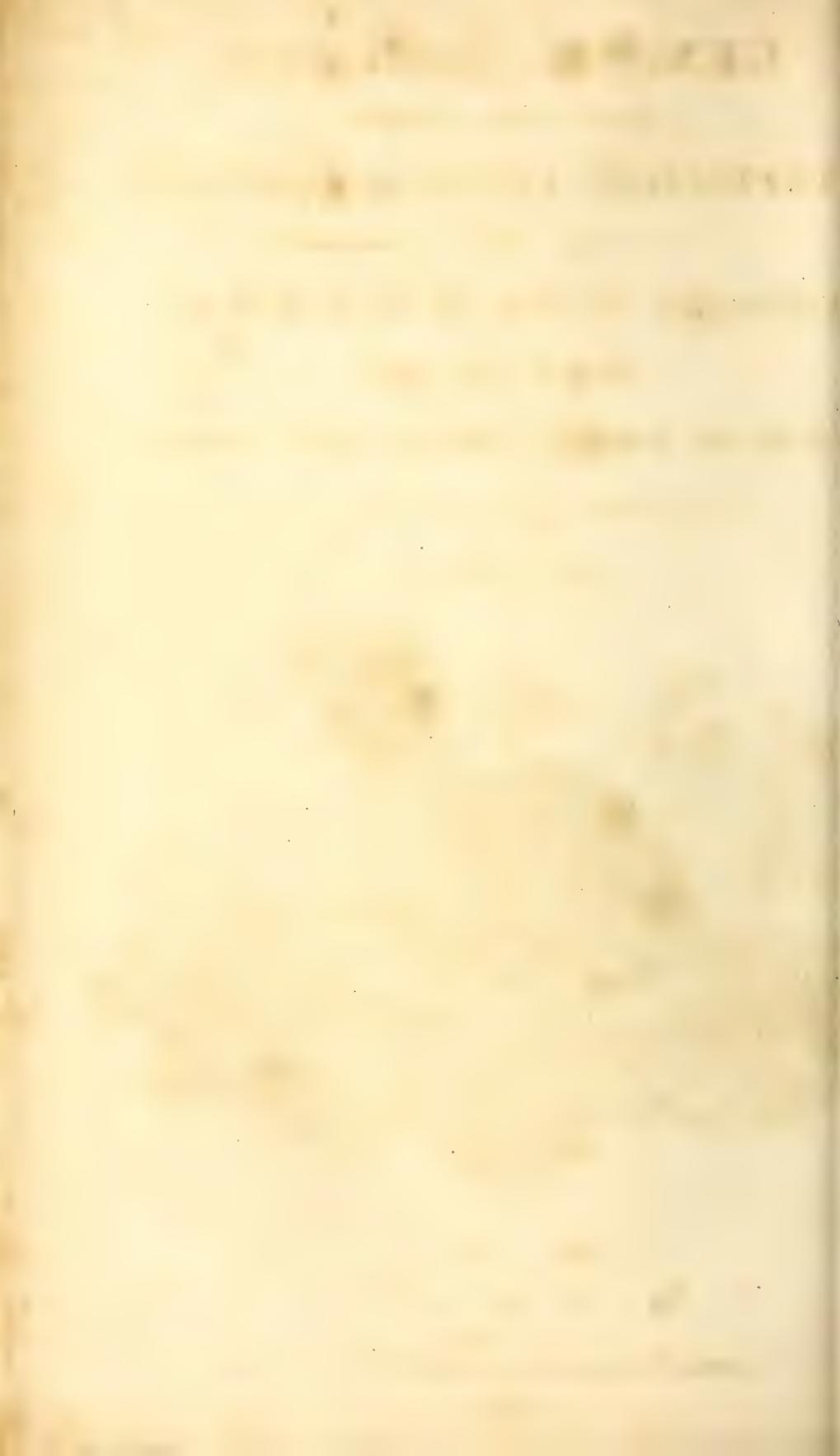


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Note to the Article PLATYPUS, vol. I. p. 232.

On laying open the parts beyond the base of the bill, it appears that the Platypus, like the Ant-Eaters, is furnished with small bony processes resembling grinding-teeth, imbedded in the gum, but not fastened or rooted in the jaw : of these processes there are two on each side both of the upper and under jaw.—See a paper on this subject by Mr. E. Home, in the 90th volume of the Philosophical Transactions.

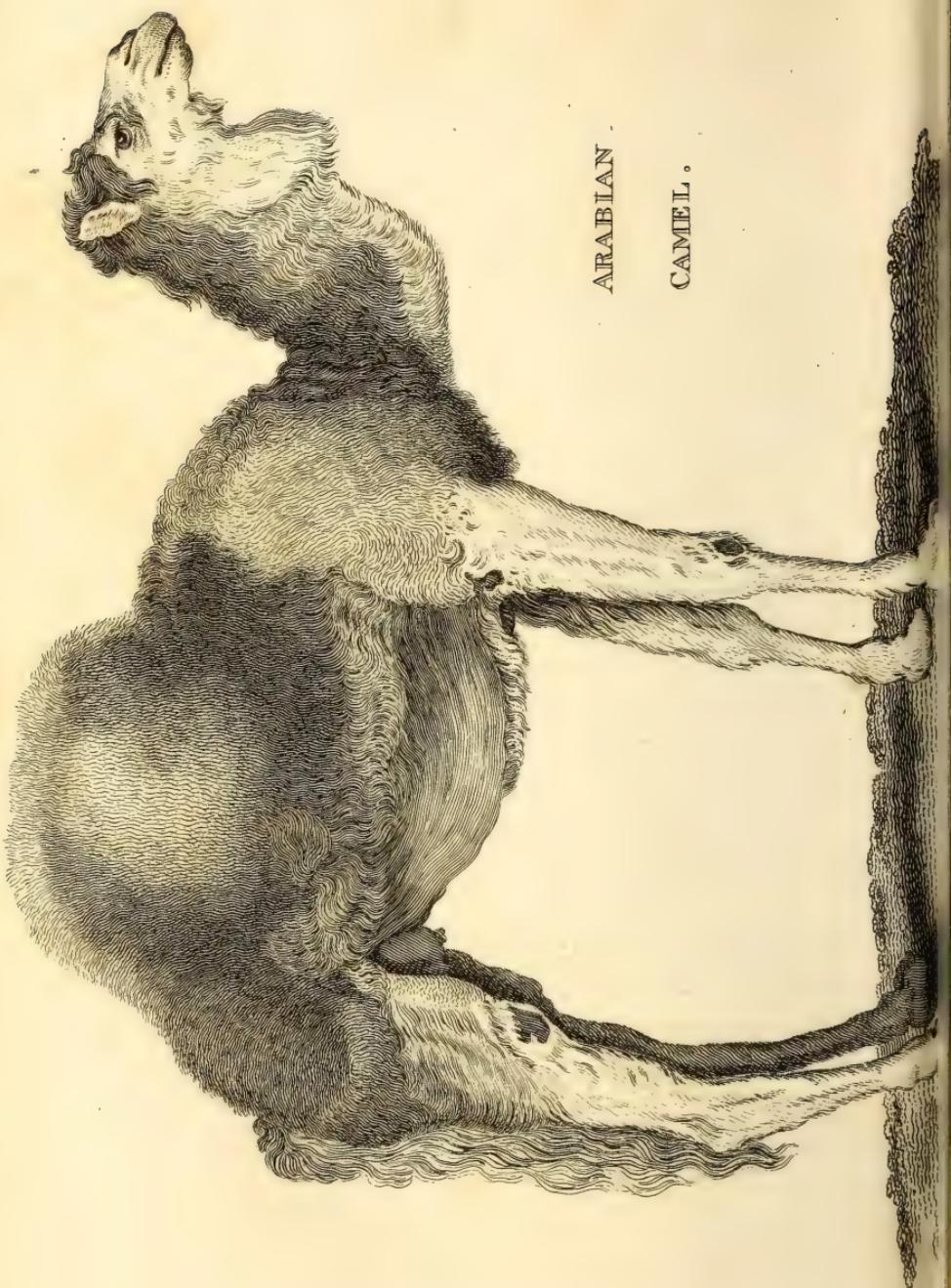
ERRATUM.—PART II.

P. 271. l. 5. The figure here said to be taken from Ridinger, is in reality from Buffon only ; Ridinger's figure representing the animal in a galloping posture, which is not its natural one.

Directions for placing the Plates in vol. II. part II.

The Vignette to Part II. represents the Pygmy Antelope.—P. 326.

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ARABIAN

CAMEL.

QUADRUPEDS.

ORDER

P E C O R A.

CAMELUS. CAMEL.

Generic Character.

<i>Cornua nulla.</i>	<i>Horns</i> none.
<i>Dentes Primores inferiores sex, spathiformes.</i>	<i>Front-teeth</i> in the lower jaw six, somewhat thin and broad.
<i>Laniarii distantes; superiores tres, inferiores duo.</i>	<i>Canine-teeth</i> distant; in the upper jaw three, in the lower two,
<i>Labium superius fissum.</i>	<i>Upper Lip</i> divided.

ARABIAN CAMEL.

Camelus Dromedarius. C. Topho dorſi unico. Lin. Syst. Nat. p. 90.

Camel with a single dorsal bunch.

Camelus. Gesn. Quadr. 172. Jonst. Quadr. 95. t. 41, 42, 43.

Aldr. bisulc. p. 908.

Le Dromadaire. Buff. 11. p. 211. pl. 9.

Arabian Camel. Pennant Quadr. 1. p. 129.

THE Camel, which, from the earliest ages of the world, has constituted the riches of Arabia, is found in the warmer parts of Asia and in the

upper regions of Africa. In Asia it is said not to be found farther north than Persia, and in Africa not farther south than Ethiopia. It is common in most parts of India.

The general height of the Arabian Camel, measured from the top of the dorsal bunch to the ground, is about six feet and a half, but from the top of the head when the animal elevates it, not much less than nine feet: the head, however, is generally so carried as to be nearly on a level with the bunch, or rather below it, the animal bending the neck extremely in its general posture: the head is small; the neck very long, the body of a long and meagre shape, the legs rather slender, and the tail, which is slightly tufted at the end, reaches to the joints of the hind legs: the feet are very large, and are hoofed in a peculiar style, being divided above into two lobes not reaching through the whole length of the foot, and the extremity of each lobe is guarded by a small hoof: the under part of the foot is covered with an extremely strong, tough, and pliable skin, which, by yielding in all directions, enables the animal to travel with peculiar ease and security over dry, stony, and sandy regions. On each leg are six callosities, viz. one on each knee, one on the inside of each fore-leg on the upper joint, and one on the inside of each hind-leg at the bottom of the thigh. On the lower part of the breast is also a large callus or tough tubercle, which is gradually increased by the constant habit which the animal has of resting upon it in lying down.

Though the Camel has even an elegant and picturesque appearance, in some particular attitudes, yet its general aspect, at first sight, is apt to impress on the mind the idea of deformity; and the dorsal bunch in particular has the appearance of some accidental monstrosity, rather than a truly natural conformation. This idea seems to have operated so powerfully on the mind of Buffon, that he has not scrupled to advance an opinion, that this part, as well as the pectoral bunch, was originally produced by ill usage, in constantly loading the animal with heavy burthens; and that, having once arisen, it has been transmitted by descent, and continues to form a permanent character. In confirmation of this theory he observes, that from the attestations of those who have dissected the Camel, it appears that these parts are often filled with a quantity of pus; the effect of previous inflammation. Upon the same principle he also conceives that the remarkable structure of the stomach, which is furnished with a peculiar apparatus of cells or receptacles for containing a great quantity of water, has originated from a similar source; “the animal, after suffering thirst for a long time, by taking as much, or perhaps more, water than the stomach could easily contain, the membrane would be gradually extended and dilated, in the same manner as we have seen the stomach of a sheep extend in proportion to the quantity of its aliment.” The Count de Buffon, however, allows that these conjectures would be either fully confirmed, or destroyed, if we

had wild Camels to examine and compare with the domestic ; but these animals can hardly be said to exist any where in a truly natural state, or if they do, no one has accurately observed and described them *.

The march of the Camel through the burning deserts of Arabia, and its signal services to the Arab, &c. &c. have been described with peculiar animation and elegance by this agreeable author, whose wayward and mistaken theories and numerous errors should not be allowed to prejudice us against the real merit of his writings.

“ Figure to yourself a country without verdure and without water, a burning sun, an air always parched, sandy plains, mountains still more adust, which the eye runs over without perceiving a single animated being ; a dead earth, perpetually tossed with the winds, and presenting nothing but bones, scattered flints, rocks perpendicular or overturned ; a desert totally void, where the traveller never breathes under a shade, where nothing accompanies him, nothing recalls the idea of animated nature ; absolute solitude, more dreadful than that of the deepest forests ; for to man, trees are, at least, visible objects ; more solitary and naked, more lost in an unlimited void, he every where beholds space surrounding him as a tomb : the light of the day, more dismal than

* The Bactrian, or two-bunched Camel, is, however, said to be found wild in the desert parts of Asia, between India and China, and to be larger than the domesticated animal.

the darkness of night, serves only to give him a clearer idea of his own wretchedness and impotence, and to conceal from his view the barriers of the void, by extending around him that immense abyss which separates him from the habitable parts of the earth ; an abyss which in vain he would attempt to traverse ; for hunger, thirst, and scorching heat haunt every moment that remains to him between despair and death.

“ The Arab, however, by the assistance of his Camel, has learned to surmount, and even to appropriate these frightful intervals of Nature. They serve him for an asylum, they secure his repose, and maintain his independence. But man never uses any thing without abuse. This same free, independent, tranquil, and even rich Arab, instead of regarding his deserts as the ramparts of his liberty, pollutes them with his crimes. He traverses them to carry off gold and slaves from the adjacent nations. He employs them for perpetrating his robberies, which unluckily he enjoys more than his liberty ; for his enterprises are almost always successful. Notwithstanding the vigilance of his neighbours, and the superiority of their strength, he carries off with impunity, all that he ravages from them. An Arab, who gives himself up to this kind of terrestrial piracy, is early accustomed to the fatigues of travelling, to want of sleep, and to endure hunger, thirst, and heat. With the same view he instructs, rears, and exercises his Camels. A few days after their birth, he folds their limbs under their belly, forces them

to remain on the ground, and in this situation loads them with a pretty heavy weight, which is never removed but for the purpose of replacing a greater. Instead of allowing them to feed at pleasure, and to drink when they are dry, he begins with regulating their meals, and makes them gradually travel long journies, diminishing, at the same time, the quantity of their aliment. When they acquire some strength, they are trained to the course. He excites their emulation by the example of horses, and in time renders them equally swift and more robust. In fine, after he is certain of the strength, fleetness, and sobriety of his Camels, he loads them both with his own and their food, sets off with them, arrives unperceived at the confines of the desert, robs the first passenger he meets, pillages the solitary houses, loads his Camels with the booty, and if pursued, he is obliged to accelerate his retreat. It is on these occasions that he unfolds his own talents and those of the Camels; he mounts one of the fleetest, and conducts the troop, and makes them travel night and day, without almost either stopping, eating, or drinking; and in this manner he easily performs a journey of three hundred leagues in eight days. During this period of motion and fatigue, his Camels are perpetually loaded, and he allows them, each day, only one hour of repose, and a ball of paste. They often run in this manner nine or ten days, without finding water; and when, by chance, there is a pool at some distance, they scent the water half a league off. Thirst makes

them double their pace, and they drink as much at once as serves them for the time that is past, and as much to come; for their journey often lasts several weeks, and their abstinence continues an equal time.

" In Turkey, Persia, Arabia, Egypt, Barbary, &c. all the articles of merchandize are carried by Camels. Of all carriages it is the cheapest and most expeditious. The merchants and other passengers unite in a caravan, to prevent the insults and robberies of the Arabs. These caravans are often very numerous, and are always composed of more Camels than men. Each Camel is loaded in proportion to his strength; and when overloaded, he refuses to march, and continues lying till his burthen is lightened. The large Camels generally carry a thousand, or even twelve hundred pounds weight, and the smallest from six to seven hundred. In these commercial travels their march is not hastened: as the route is often seven or eight hundred leagues, their motions and journies are regulated. They walk only, and perform about from ten to twelve leagues each day. Every night they are unloaded, and allowed to pasture at freedom. When in a rich country or fertile meadow, they eat, in less than an hour, as much as serves them to ruminate the whole night, and to nourish them during twenty-four hours. But they seldom meet with such pastures; neither is this delicate food necessary for them. They even seem to prefer wormwood, thistles, nettles, broom, cassia, and other prickly

vegetables, to the softest herbage. As long as they find plants to brouse, they easily dispense from drink.

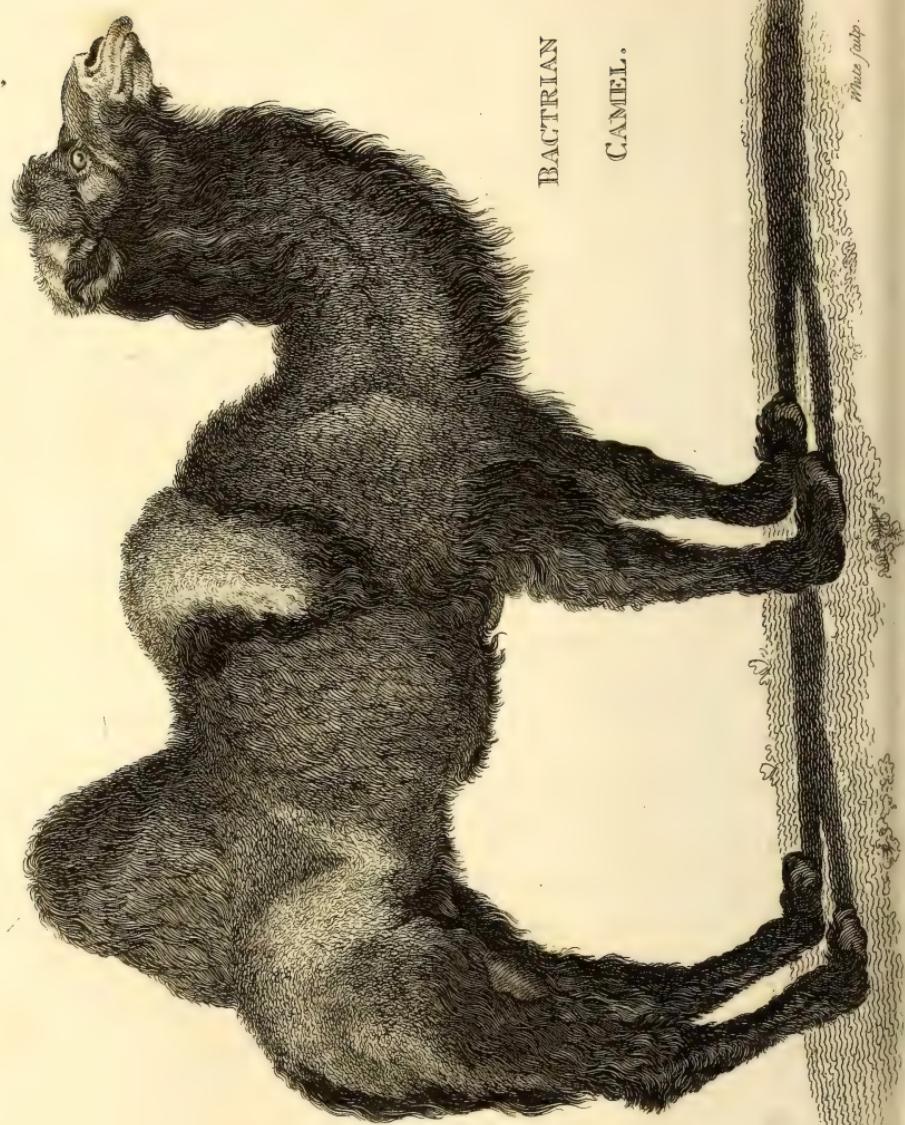
" Besides, this facility of abstaining long from drink, proceeds not from habit alone, but is rather an effect of their structure. Independent of the four stomachs, which are common to ruminating animals, the Camels have a fifth bag, which serves them as a reservoir for water. This fifth stomach is peculiar to the Camel. It is so large as to contain a vast quantity of water, where it remains without corrupting or mixing with the other aliments*. When the animal is pressed with thirst, and has occasion for water to macerate his dry food in ruminating, he makes part of this water mount into his stomach, or even as high as the throat, by the mere contraction of certain muscles. It is by this singular construction that the Camel is enabled to pass several days without drinking, and to take at a time a prodigious quantity of water, which remains in the reservoir pure and limpid, because neither the liquors of the body nor the juices of digestion can mix with it.

" If we reflect on the dissimilarity in this animal from other quadrupeds, we cannot doubt that his nature has been considerably changed by constraint, slavery, and perpetual labour. Of all

* This particularity is well known to Oriental travellers, who have sometimes found it necessary to kill a Camel in order to obtain a supply of water thus preserved in its receptacle. In Mr. Bruce's travels may be found instances of this.

animals the Camel is the most antient, the completest, and the most laborious slave. He is the most antient slave, because he inhabits those climates where men were first polished. He is the most complete slave, because in the other species of domestic animals, as the horse, the dog, the ox, the sheep, the hog, &c. we still find individuals in a state of nature, and which have not submitted to man. But the whole species of the Camel is enslaved ; for none of them exist in their primitive state of liberty and independence. Lastly, he is the most laborious slave ; because he has never been nourished for pomp, like most horses, nor for amusement, like most dogs, nor for the use of the table, like the ox, the hog, and the sheep ; because he has always been made a beast of burthen, whom men have never taken the trouble of yoking in machines, but have regarded the body of the animal as a living carriage, which they may load, or overload, even during sleep ; for when pressed, the load is sometimes not taken off, but the animal lies down under it with his legs folded, and his body resting on his stomach. Hence they perpetually bear the marks of servitude and pain. Upon the under part of the breast is a large callosity, as hard as horn, and similar ones on the joints of the limbs. Though these callosities are found on all Camels, they exhibit a proof that they are not natural, but produced by excessive constraint, and painful labour ; for they are often filled with pus. The

breast and legs are, therefore, deformed by callosities; the back is still more disfigured by one or two bunches. The callosities, as well as the bunches, are perpetuated by generation. As it is obvious that the first deformity proceeds from the constant practice of forcing these animals, from their earliest age, to lie on their stomach, with their limbs folded under the body; and in this situation to bear both the weight of their own bodies, and that of the load laid on their backs, we ought to presume that the bunch or bunches have also originated from the unequal pressure of heavy burthens, which would naturally make the flesh, fat, and skin swell; for these bunches are not osseous, but composed of a fleshy substance resembling a cow's udder. Hence the callosities and bunches should be regarded equally as deformities produced by continual labour and bodily constraint; and though at first accidental and individual, they are now become permanent, and common to the whole species. We may likewise presume that the bag which contains the water, and is only an appendix to the stomach, has been produced by an unnatural extension of that viscous. The animal, after suffering thirst for a long time, by taking in at once as much, and perhaps more, water than the stomach could easily contain, this membrane would be gradually extended and dilated, as we have seen the stomach of a sheep dilated in proportion to the quantity of its aliment. In sheep fed with grain the stomach is



BACTRIAN

CAMEL.

Mus. Jap.

very small; but becomes very large in those fed with herbage alone.

"These conjectures would be either confirmed or destroyed, if we had wild Camels to compare with the domestic; but these animals nowhere exist in a natural state, or if they do, no one has described or observed them. We ought, therefore, to suppose that every thing good and beautiful belongs to Nature, and that whatever is defective and deformed in these animals proceeds from the labour and slavery imposed on them by the empire of man."

The general colour of the Camel is an uniform dusky brown, more or less tinged with ferruginous. Its hair is fine and soft, and serves for the basis of several kinds of stuffs.

There are several varieties of this animal, differing in size, strength, &c. analogous to the different breeds of horses

BACTRIAN CAMEL.

Camelus Bactrianus. *C. tophis dorsi duobus.* Lin. Syst. Nat.

p. 90.

Camel with two dorsal bunches.

Camelus. Gesn. Quadr. 163. Aldr. bisulc. 907.

Dromedarius. Jonst. Quadr. p. 42. 43, 44. f. 1.

Le Chameau. Buff. 11. p. 211, 246. pl. 22.

Bactrian Camel. Pennant Quadr. 1. p. 132.

IN its general appearance the Bactrian Camel so much resembles the Arabian, that it might ra-

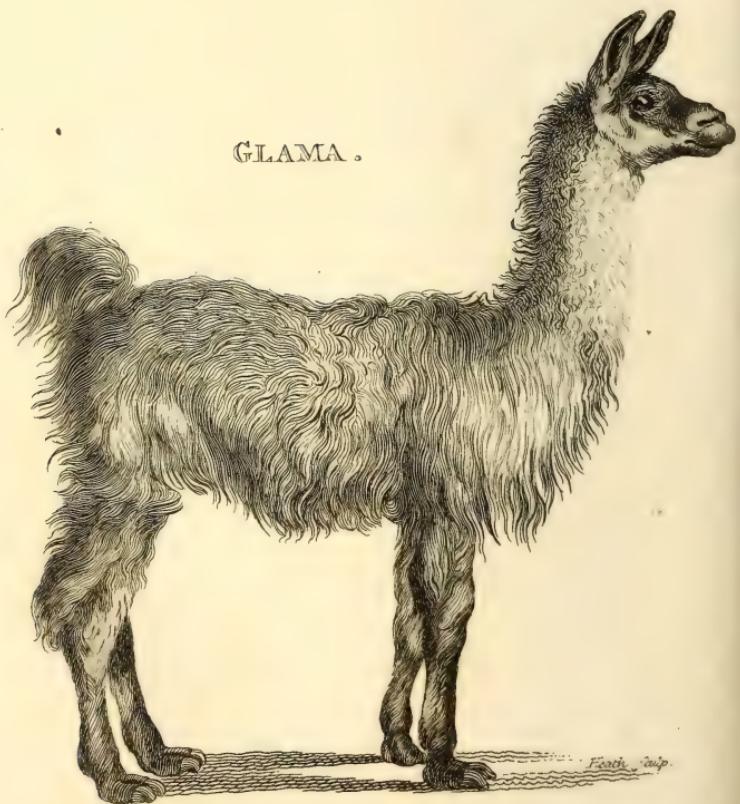
ther seem a permanent variety of that animal, than a distinct species; differing only in being somewhat larger and in having two bunches on the back instead of one. It is said to be found wild in the northern parts of India, and in the deserts bordering on China, and is more esteemed for swiftness than the Arabian Camel.

In Arabia it is kept chiefly for the use of the great, being not a native of that country, but imported from India, &c. Of this animal, as well as of the Arabian Camel, there are several races or varieties, differing, like those of horses, in strength, size, swiftness, and elegance of form. A breed of peculiar swiftness is said to be reared in China, and to be distinguished by the expressive title of *Fong Kyo Fo*, or Camels with feet of wind. A white variety occurs in some parts of Siberia, and lastly, a hybrid or mixed breed is said to be occasionally obtained between the Bactrian and the Arabian Camel.

VICUNA.



GLAMA.



GLAMA.

Camelus Glama. *C. dorso laevi, topho pectorali.* *Lin. Syst. Nat.*

p. 91.

Pale ferruginous Camel, whitish beneath, with smooth back, and pectoral bunch.

Camelus Peruvianus Glama dictus. *Raj. Quadr. 145.*

Ovis Peruana. *Charlet, exer. p. 9.* *Jonst. Quadr. t. 46.*

Le Lama. *Buff. 13. p. 16.* and *Suppl. 6. p. 204. pl. 27.*

Llama. *Pennant Quadr. 1. p. 133.*

THIS animal, described by some of the old naturalists, under the name of *Ovis Peruviana**, or Peruvian Sheep, is a native of South America, and is particularly plentiful in Peru, where it inhabits, in a wild state, the highest and coldest parts of mountains, feeding in numerous herds, and flying with great rapidity on the sight of mankind. It was, however, completely subdued and domesticated by the antient Peruvians, being the only beast of burthen known to that people, to whom it answered the same purposes as the Camel and Dromedary in the eastern regions of the old continent. The general size of the Glama is nearly that of a stag; measuring about four feet and a half in height to the top of the shoulders, and about six feet in length from nose to tail. The neck is of a great length; the head small; the back slightly elevated, and the whole animal bears some resemblance to a Camel on a smaller scale. Its

* This name has also been applied by some authors to the Paco, &c.

general colour is a light ferruginous brown, paler or whitish on the under parts ; and sometimes it is said to be varied or patched with darker and lighter shades on different parts, and to have a black stripe running down the back to the beginning of the tail.

The hair, in the wild animal, is long and shaggy : in the domesticated smoother and closer. On the breast is a protuberance, from which is observed to exude a kind of oily secretion. The voice of the Glama resembles the shrill neighing of a horse. When angry or attacked, it strikes with its feet, endeavours to bite, and at the same time ejaculates from its mouth a quantity of saliva, which is said to be of a caustic or acrimonious nature, and to excite a slight inflammation on the skin. The Glama is said to be able to carry a burthen of about a hundred and fifty pounds weight, and to travel at the rate of three German miles a day for three or four days together. When resting, it leans on its breast in the manner of the Camel, which it also resembles in the faculty of abstaining long from drink ; sometimes four or five days ; and, like that animal, may be supported by very coarse and trifling food. Its flesh is said to resemble mutton in flavour.

The individual described in the 6th supplemental volume of Buffon, was remarkable for the mildness of its manners and the docility of its disposition.

VICUNA.

Camelus Vicugna. *C. corpore lanato laevi, rostro simo obtuso, cauda erecta.* Lin. Syst. Nat. Gmel. p 171.

Purplish-brown Camel, whitish beneath, with smooth woolly body, obtuse snout, and upright tail.

Camelus laniger. Klein. Quadr. 42.

Vicognes ou Vicunas. Frez. voy. 1. p. 266.

La Vigogne. Buff. Suppl. 6. p. 208. pl. 38.

Vicunna. Pennant Quadr. 1 p. 136.

THE Vicuna, as may be perceived by consulting the annexed representation, bears an extreme general resemblance to the Glama; but is of a lighter and more delicate aspect, and of smaller size: the head is smaller and shorter in proportion: the eyes remarkably large and full: the ears somewhat sharper, and the limbs more slender: the tail has a somewhat erect appearance, contrary to the character given in the Gmelian edition of the Systema Naturæ; but perhaps too great a dependence is not to be placed on a character like this, which may vary somewhat in different individuals, and which ought never to be assumed as a discriminating character, except where the appearance is peculiarly marked and striking. The prevailing colour of the Vicuna on the upper parts is a reddish brown, or approaching to wine-colour, and the remainder of an Isabella colour: the breast, belly, insides of the thighs, and under part of the tail, are white. The hair of this animal is of a very soft, wavy, and woolly nature; that on the breast is nearly three inches long; on the other parts not more than one inch: the

end of the tail is furnished, like the breast, with long woolly hair. The individual described in the sixth supplemental volume of Buffon was of a somewhat fierce disposition, and often attempted to bite those who examined it. It was never observed to drink, and seemed to have the same general habits and manners as the Glama.

The Glama, the Paco, and the Vicuna, have sometimes been considered as the same species, and what seems to have been a principal cause of confusion among naturalists with respect to these Peruvian animals is, that the word *Lama* or *Glama* is used among the Peruvians as a general name rather than a particular one. In the provinces of Cusco, Potosi, and Tucuman, we are assured that three species of Lamas are distinguished by appropriate titles.

The Vicuna seems to afford the finest wool of any, and it is wrought into cloths of most exquisite silky softness and beauty, which are said to be too warm for common wear, unless made peculiarly thin.

The Vicuna, as well as the Paco or next species, is sometimes taken by the Peruvians by the simple artifice of tying cords, with bits of wool or cloth fixed to them at certain distances, at three or four feet from the ground, across the narrow passes of the mountains; and when the animals have been hunted or driven that way, they are so terrified by the fluttering of the rags, that, instead of attempting to pass, they huddle together in heaps, and thus afford their pursuers an opportu-

nity of killing with their slings as many as they please.

This circumstance of being terrified, and as it were fascinated, by a cord drawn across any particular space, is, however, by no means peculiar to this animal, but takes place, as is well known, in several of the Deer tribe, and particularly in the common Fallow Deer, which may be easily confined in a similar manner.

PACO.

Camelus Paco. *C. tophis nullis, corpore lanato, rostro oblongo.*

Lin. Syst. Nat. Gmel. p. 171.

Purplish-brown woolly Camel, white beneath, with oblong snout.

Paco. *Laet. amer. p. 405.*

Paco. Alpaco. *Molin. Chil. 296. Buff. 13. pl. 16.*

Pacos. *Pennant Quadr. 1. p. 137.*

THIS species is said to be entirely confined to Peru, where the natives keep vast flocks of them for the sake of the wool, of which they prepare cloth of silky lustre and softness. Like the Vicuna, it is found in mountainous districts in large herds, but is never observed to associate with those animals. It is of a more robust make* than the Vicuna, and is covered with very long wool, which is, in the wild animal, of a dull purple co-

* Gmelin, in his edition of the *Systema Naturæ*, says it is smaller; but I am not without my suspicions that the *Vicugna* of Gmelin is the *Pacos* of Pennant, and *vice versa*.

lour, resembling that of dried rose leaves, but in the domesticated kind is often varied with black, white and rufous: the belly is white. Like the two preceding species, it has sometimes been named the Peruvian Sheep. Those concretions, known by the name of Bezoars, are often found in the stomach of this as well as of other species.

GUANACO.

Camelus Huanacus. *C. corpore piloso, dorso gibbo, cauda erecta.*

Lin. Syst. Nat. Gmel. p. 170. Molin. Chil. p. 281.

Tawny Camel, white beneath, with gibbose back, and upright tail.

Guanaco, sive Huanacu. *Laet. amer. p. 406. Ulloa voy. 1. p. 366. t. 24. f. f.*

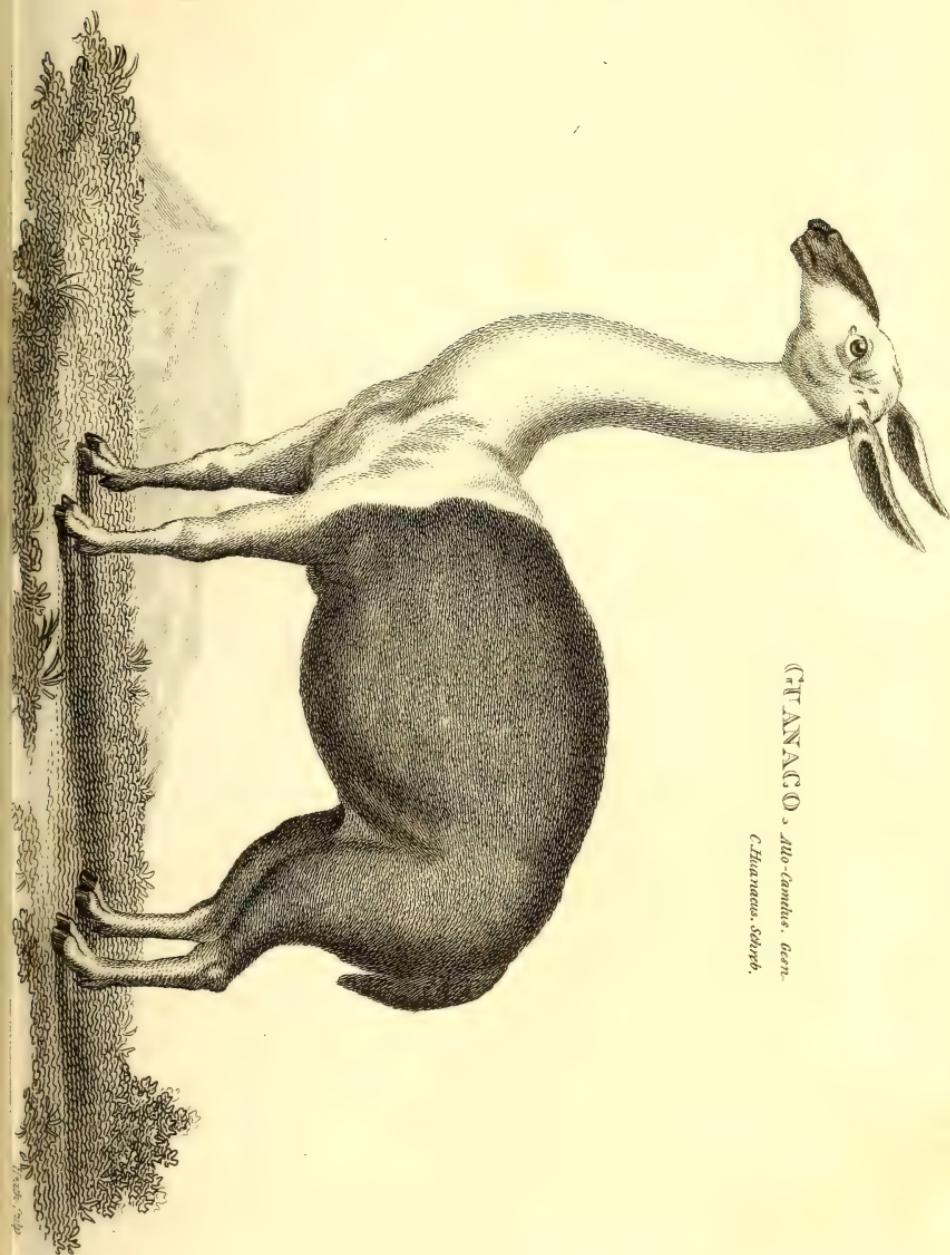
Cervo-Camelus. *Jonst. Quadr. t. 29.?*

Camelus Huanacus. *Schreber saeugh. t. 306.?*

Guanaco. *Pennant Quadr. 1. p. 138.*

Allo-Camelus. *Gesn. ic. Quadr. p. 43.*

THE Guanaco is a native of Peru, and is found in similar situations with the Glama and the Paco. It is the largest of all the Peruvian animals of this kind, and is said sometimes to grow to the size of a horse. Its back is pretty much arched, and it is covered, not with wool like the other smaller species, but with long, smooth hair: the head is round; the nose somewhat pointed; the ears strait, like those of a horse; and the tail short, and turning upwards. It appears to be more nearly allied to the Glama than to any other species, but is said never to associate with that ani-



(CATANACO, Mo-Sambo, Gern.

C. Huonaeus. Schub.

CERVUS CAMELUS. Jonsk.



White ouvp.

mal. Its general colour is tawny above and white below. In summer it inhabits the tops of the mountains, but in winter descends into the vallies. It runs with extreme swiftness, and from the length of its hind legs, prefers descending the hills, which it does by leaps and bounds, in the manner of a buck. When young it is said to be hunted with dogs, and when old to be chased on swift horses, and caught with nooses dextrously thrown. The flesh of the young animals is said to be excellent; and that of the old is preserved with salt.

I must here observe, that the figure published by Mr. Schreber, under the title of *Camelus Hu-anacus*, contradicts the specific character given by Molina and others, having a pendent tail instead of an elevated one. The figure is evidently copied from Gesner, who calls the animal by the name of *Allo-Camelus*, and mentions it as having been sent from South America into Europe, in the year 1558, and called an Indian Sheep. It was six feet high, and five in length: the neck was as white as that of a swan; the rest of the body reddish, or purplish; and the feet shaped like those of a Camel. This figure is introduced into the present publication, together with a plate of the *Cervo-Camelus*, of Johnston (which is generally quoted by authors for the *Glama*), and to which the first mentioned figure is evidently much allied.

Upon the whole, I cannot avoid expressing my suspicion, that no great dependence is to be placed

on the specific characters hitherto given of some of these animals, and that if the subject were accurately investigated, it might perhaps be discovered that they are rather varieties than species truly distinct.

CHILIHUQUE.

Camelus Arcucanus. *C. corpore lanato lavi, rostro superne curvo, cauda pendula.* Lin. Syst. Nat. Gmel. p. 170. Molin. Chil. p. 279.

Camel with smooth woolly body, curved snout, and pendulous ears and tail.

Aries moromorus. Nieremb. Hist. Nat. p. 182.

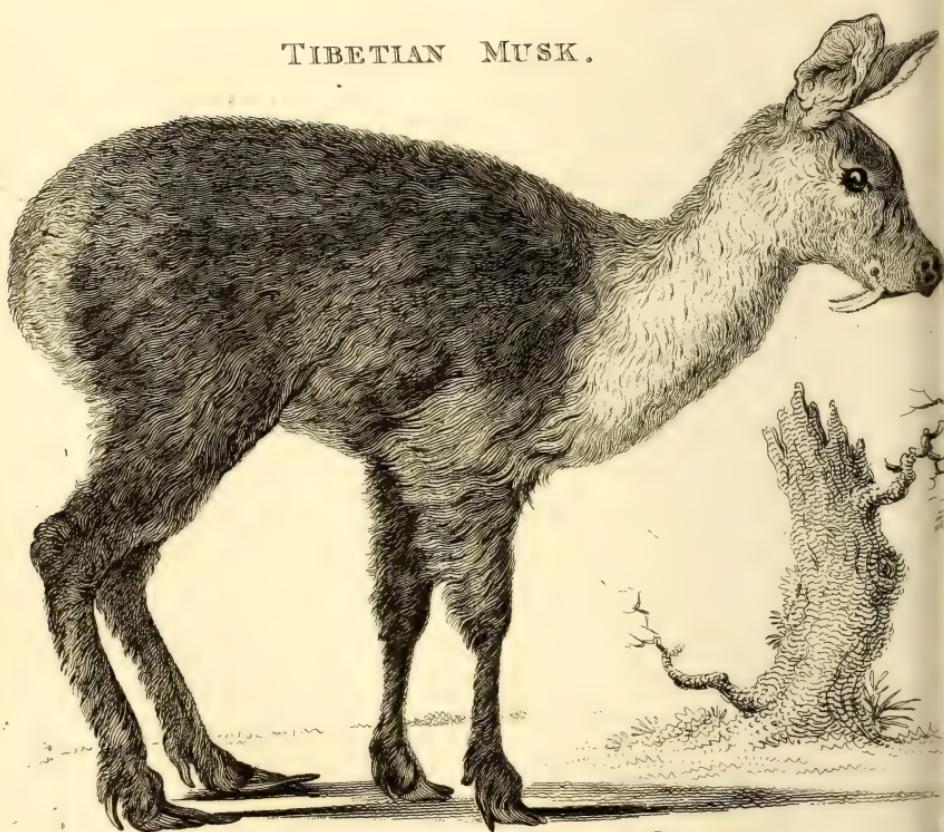
Moutons de Perou. Frez. voy. 1. p. 264. t. 22. A.

Chilihueque. Pennant Quadr. 1. p. 138.

THIS species, which inhabits Peru and Chili, is described as measuring about six feet in length, and about four in height. It is covered with woolly hair, and in its general appearance is not unlike a ram. The ears are flaccid or pendulous, the neck and legs long, the tail like that of a sheep, but shorter in proportion: the wool is very soft, and the colour of the animal is said to vary in different individuals, being either brown, black, ash-coloured, or white. This animal was employed by the ancient inhabitants of Chili as a beast of burthen, as well as in ploughing: its wool was also used in the manufacture of a fine silky cloth or stuff; but this is now said to have given place to the introduction of European wool, as being stronger and more serviceable.



TIBETIAN MUSK.



MOSCHUS. MUSK.

Generic Character.

<i>Cornua nulla.</i>	<i>Horns none.</i>
<i>Dentes Primores inferiores octo.</i>	<i>Front-teeth in the lower jaw eight.</i>
<i>Laniarii superiores solitarii exserti.</i>	<i>Tusks solitary, in the upper jaw, exserted.</i>

TIBETIAN MUSK.

Moschus Moschiferus. M. folliculo umbilicali. Lin. Syst. Nat. p. 91.

Grey-brown Musk with umbilical follicle.

Moschus. Schroeck. hist. mosch. t. 44.

Animal moschiferum. *Nieremb. hist. nat. p. 184. J. G. Gmelin nov. comm. Petrop. 4. p. 393. Raj. Quadr. t. 127.*

Capra moschi. Aldr. bisulc. p. 743. Gesn. Quadr. p. 786.

Le Musc. Buff. 12. p. 361. and Suppl. 6. p. 221. pl. 29.

THE Musk is one of those quadrupeds whose true form and natural history appear to have continued in great obscurity long after the introduction and general use of the celebrated perfume which it produces. To the ancients it was un-

known, and was first mentioned by the Arabians*, whose physicians used the drug in their practice. The animal was by some considered as a kind of Goat, by others as a species of Deer, or Antelope, and was, of course, supposed to be a horned animal; nor was it till about the decline of the seventeenth century that a tolerably accurate description or figure was to be found.

The size and general appearance of this animal not ill resemble those of a small Roebuck. It measures about three feet three inches in length; about two feet three inches in height from the top of the shoulders to the bottom of the fore-feet, and two feet nine inches from the top of the haunches to the bottom of the hind-feet. The upper jaw is considerably longer than the lower, and is furnished on each side with a curved tusk about two inches long, and consequently exposed to view when the mouth is closed. These tusks are of a different form from those of any other quadruped; being sharp-edged on their inner or lower side, so as to resemble, in some degree, a pair of small crooked knives: their substance is a kind of ivory, as in the tusks of the Babyrussa and some other animals. The ears are long and narrow, of a pale yellow on the inside, and deep brown on the outside: the chin of a yellowish cast; the general colour of the whole body a kind of deep iron-grey; the tips of the hairs being of a ferruginous cast, the remainder blackish, growing much paler

* In the eighth century it was described by Serapion.

or whitish towards the roots: each hair is somewhat waved or undulated throughout its whole length; and is of a strong and elastic nature, growing somewhat upright on the animal, and very thick. In some specimens the cheeks are whitish, and the sides of the neck marked by a longitudinal whitish band or stripe, descending to the breast; while the flanks and sides are obscurely striped by a few waved whitish streaks: in others the colour is uniform, or as at first described: the hoofs are long and black: the tail extremely short, and so concealed by the fur as to be scarce, if at all, visible on a general view.

The female is smaller than the male, and wants the tusks: it has also two small teats.

These animals are principally found in the kingdom of *Tibet*; the province of *Mohang Meng*, in *China*; *Tonquin*, and *Boutan*. They are also found about the lake *Baikal*, and near the rivers *Jenesea* and *Argun*. Their favourite haunts are the tops of mountains covered with pines, where they delight to wander in places of the most difficult access, resembling, in their manners, the Chamois and other mountain quadrupeds, springing with great celerity, and, when pursued, taking refuge among the highest and most inaccessible summits.

They are hunted for the sake of their well-known perfume; which is contained in an oval receptacle about the size of a small egg, hanging from the middle of the abdomen, and peculiar to the male animal. This receptacle is found constantly filled with a soft, unctuous, brownish sub-

stance, of the most powerful and penetrating smell; and which is no other than the perfume in its natural state. As soon as the animal is killed, the hunters cut off the receptacle or musk-bag, and tie it up ready for sale. The animals must of necessity be extremely numerous in some parts, since we are assured by Tavernier, the celebrated merchant and traveller, that he purchased, in one of his eastern journeys, no less than seven thousand six hundred and seventy-three musk-bags.

This receptacle or follicle containing the musk is covered externally with short brown hair, and is more or less full according to the age, health, &c. of the animal: the contained substance or musk is, when dry, of a dark reddish brown or rusty black colour, somewhat unctuous, and of a more or less granulated appearance: it has a bitterish subacid taste; and a fragrant smell, agreeable at a distance, but so strong as to be highly unpleasant when smelt near to. So violent indeed is the smell of musk, when fresh taken from the animal, or from quantities put up by the merchants for sale, that it has been known to force the blood from the nose, eyes, and ears of those who have imprudently inhaled its vapours; and we are assured by Chardin, that whenever he was engaged in making purchases of musk, he always found it necessary to cover his face with several folds of a handkerchief, in order to be sufficiently secure against the sudden effects of the smell.

As musk is an expensive drug it is frequently adulterated by various substances, and we are

assured that pieces of lead have been found in some of the receptacles, inserted in order to increase the weight. The smell of musk is so remarkably diffusive, that every thing in its neighbourhood becomes strongly infected with it; and what has once received it, is apt to retain the scent for a great length of time: even a silver cup that has had musk in it does not easily part with the scent, though other odors are in general very readily discharged from metallic substances.

As a medicine it is held in high estimation in the eastern countries, and has now been introduced into pretty general use among ourselves, especially in those disorders which are commonly termed nervous; and in convulsive and other cases, it is often exhibited in pretty large doses with great success.

INDIAN MUSK.

Moschus Indicus. *M. supra rufus, subtus albidus unicolor, ungulis succenturiatis, cauda unicolo. Lin. Syst. Nat. Gmel.*

p. 173.

Rufous Musk, whitish beneath, with spurious hoofs, and somewhat lengthened tail.

Tragulus Indicus. *Briss. regn. anim. p. 95. n. 1.*

THIS species is said by Mons. Brisson, who seems its first describer, to be rather larger than the common or Tibetan Musk, of the colour mentioned in the specific character, with the head

shaped like that of a horse, upright oblong ears, and slender legs. It is a native of India.

PYGMY MUSK.

Moschus Pygmæus. *M. supra fusco-rufus, subtus albus, unguis succenturiatis nullis.* Lin. Syst. Nat. Gmel. p. 173. Erxl. mamm. p. 322. n. 3.

Reddish-brown Musk, white beneath, without false hoofs.

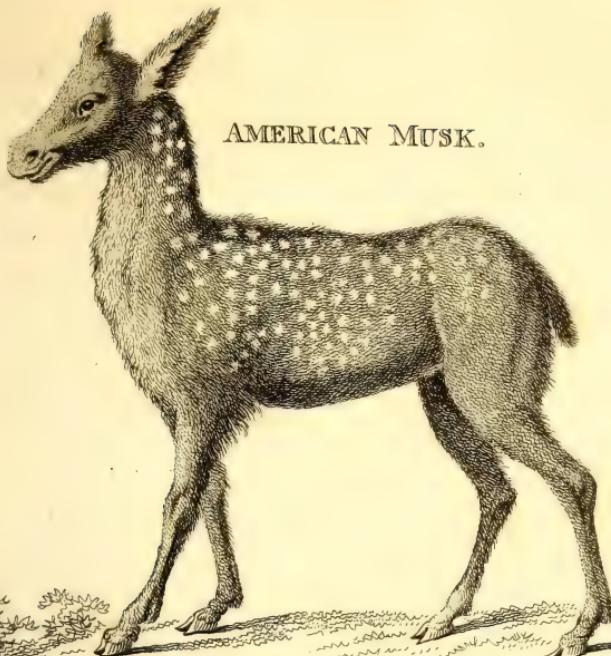
Moschus Pygmæus. *M. pedibus digito humano angustioribus.* Lin. Syst. Nat. 12. ed. p. 92.

Cerva parvula Africana, &c. Seb. mus. 1. p. 70. t. 43. f. 1, 2, 3.

Le Chevrotain. Buff. 12. p. 341. pl. 42, 43.

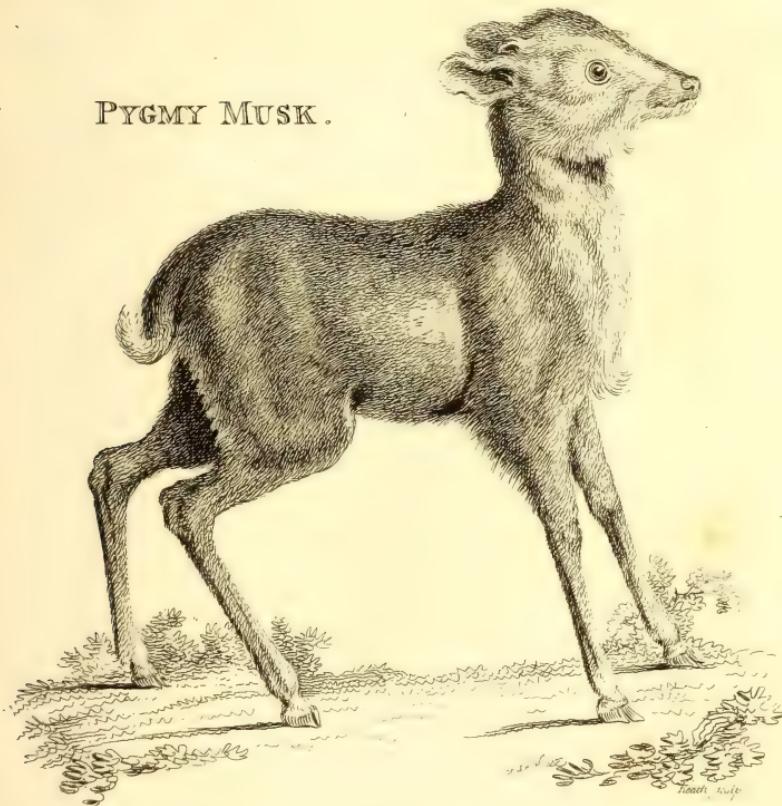
Guinea Musk. Pennant Quadr. 1. p. 127.

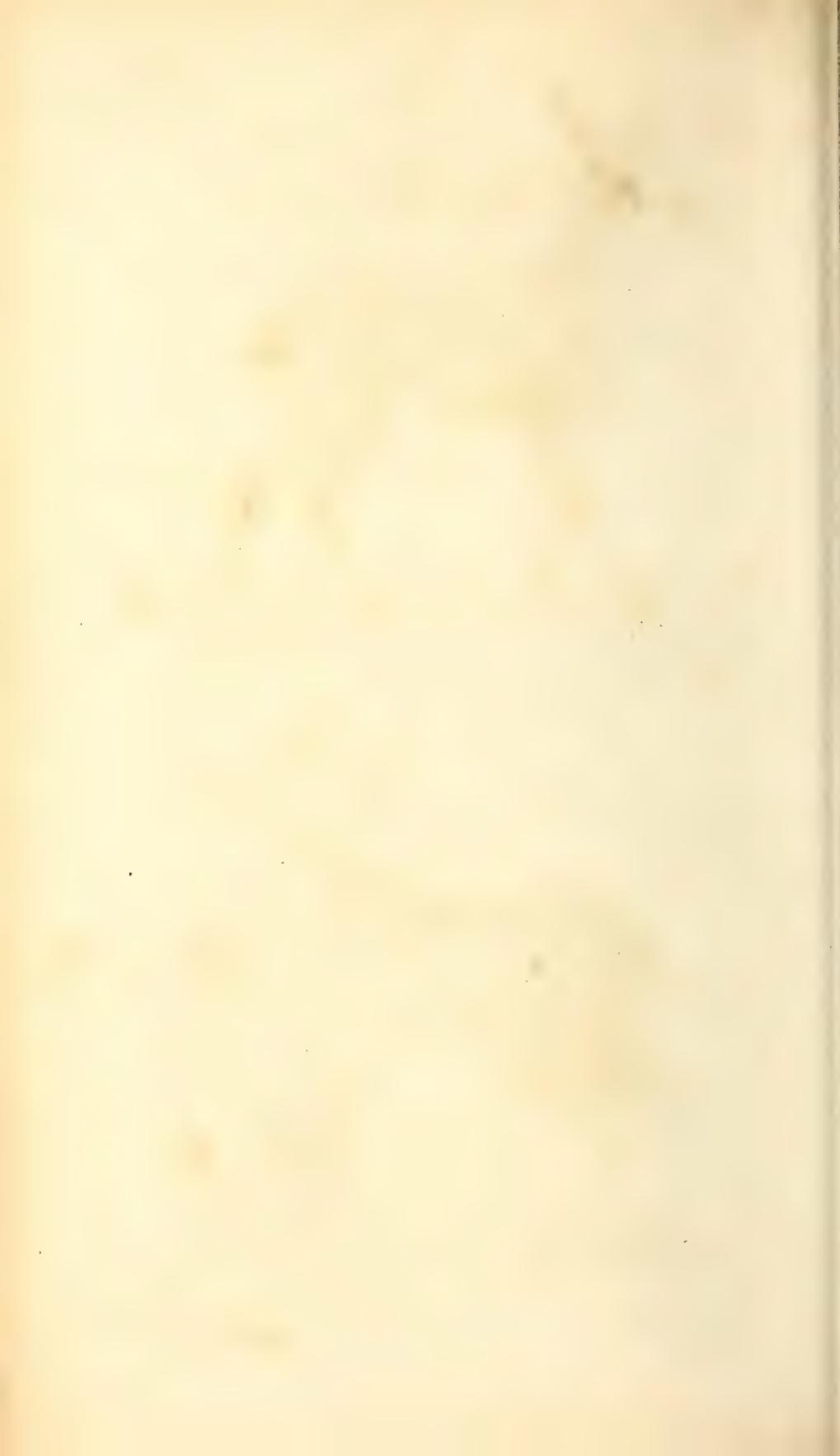
THIS most elegant little animal is considerably smaller than a domestic cat, measuring little more than nine inches from the nose to the tail. Its colour is bright bay, white beneath and on the insides of the thighs. Its shape is beautiful, and the legs are so slender as not to exceed the diameter of a swan quill: the head is rather large, the ears and eyes large, and the aspect mild: in the upper jaw are two tusks: the tail is about an inch in length, and the feet are remarkable for having no appendicular or false hoofs, by which mark this species may be distinguished from some others, not only of this genus, but of that of *Antelope*, to which it is nearly allied in size and general appearance. It is a native of many parts of the East Indies and the Indian islands, and is said to be most common in Java, where the natives



AMERICAN MUSK.

PYGMY MUSK.





catch great numbers in snares, and carry them to the markets in cages for sale. According to Mr. Pennant they may be purchased at so low a rate as two pence halfpenny a-piece.

The Pygmy Musk has been very elegantly figured by Seba and others, but has often been confounded with some other species, as well as with the Royal Antelope, an animal equally beautiful and diminutive, and which will be described under its proper genus. It is necessary to observe, that our present animal is improperly supposed by M. Brisson and others to be a native of Guinea. I must also add, that the elegant specimen in the Leverian Museum, particularly referred to by Mr. Pennant, in his History of Quadrupeds, as well as described by myself in the *Naturalist's Miscellany*, is in reality a different species, viz. the *Moschus Javanicus*.

The legs of the Pygmy Musk have been frequently capped at the upper joint with gold or silver, and in that state used by way of tobacco-stoppers. Specimens thus prepared may be seen in most museums, and are also engraved in the works of Seba and Buffon. A leg of this animal is also described by Grew in his Museum of the Royal Society, under the highly improper title of a leg of a *Greenland Stag*.

MEMINNA.

*Moschus Meminna. M. supra cinereo-olivaceus, subtus albus,
lateribus albo-maculatis, unguulis succenturiatis nullis. Lin. Syst.
Nat. Gmel. p. 174.*

Olivaceo-cinereous Musk, white beneath, with the sides spotted
with white, and no false hoofs.

Meminna. *Knox Ceyl. p. 21.*

Chevrotain à peau marquée de taches blanches. *Buff. 12.
p. 315.*

Mémima ou Chevrotain de Ceylan. *Buff. Suppl. 3. p. 102. pl. 15.*
Indian Musk. *Pennant Quadr. 1. p. 127.*

THE Meminna is a native of the Indian islands,
and is chiefly found in Ceylon and Java.

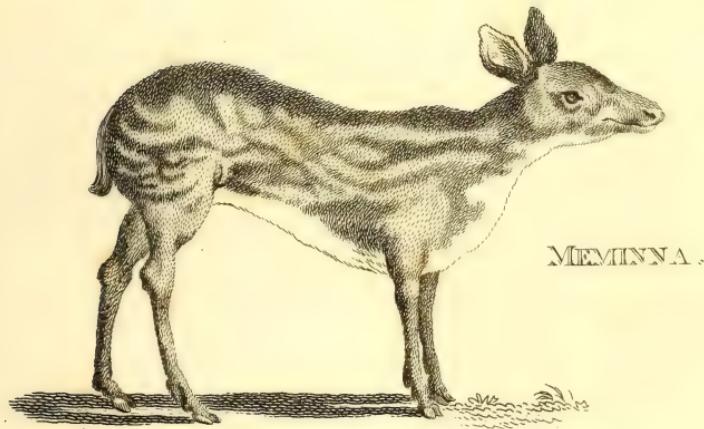
It is readily distinguished, by its remarkable
colour and spots, from the rest of its congeners.
It seems to have been first acknowledged as a dis-
tinct species of this genus by Mr. Pennant, who
described it from a drawing communicated by
Governor Loten from Ceylon.

Its length is about seventeen inches; its colour
a cinereous olive, with the throat, breast, and belly,
white, and the sides and haunches spotted and
barred transversely with white: the ears are large
and open, and the tail very short. The weight of
this species is about five pounds and a half.

The Count de Buffon, in his third supplement-
ary volume, has figured this animal, but seems to
consider it as a variety rather than a distinct spe-
cies, and confounds it with the *Moschus pyg-
mæus.*

JAVA MUSK.

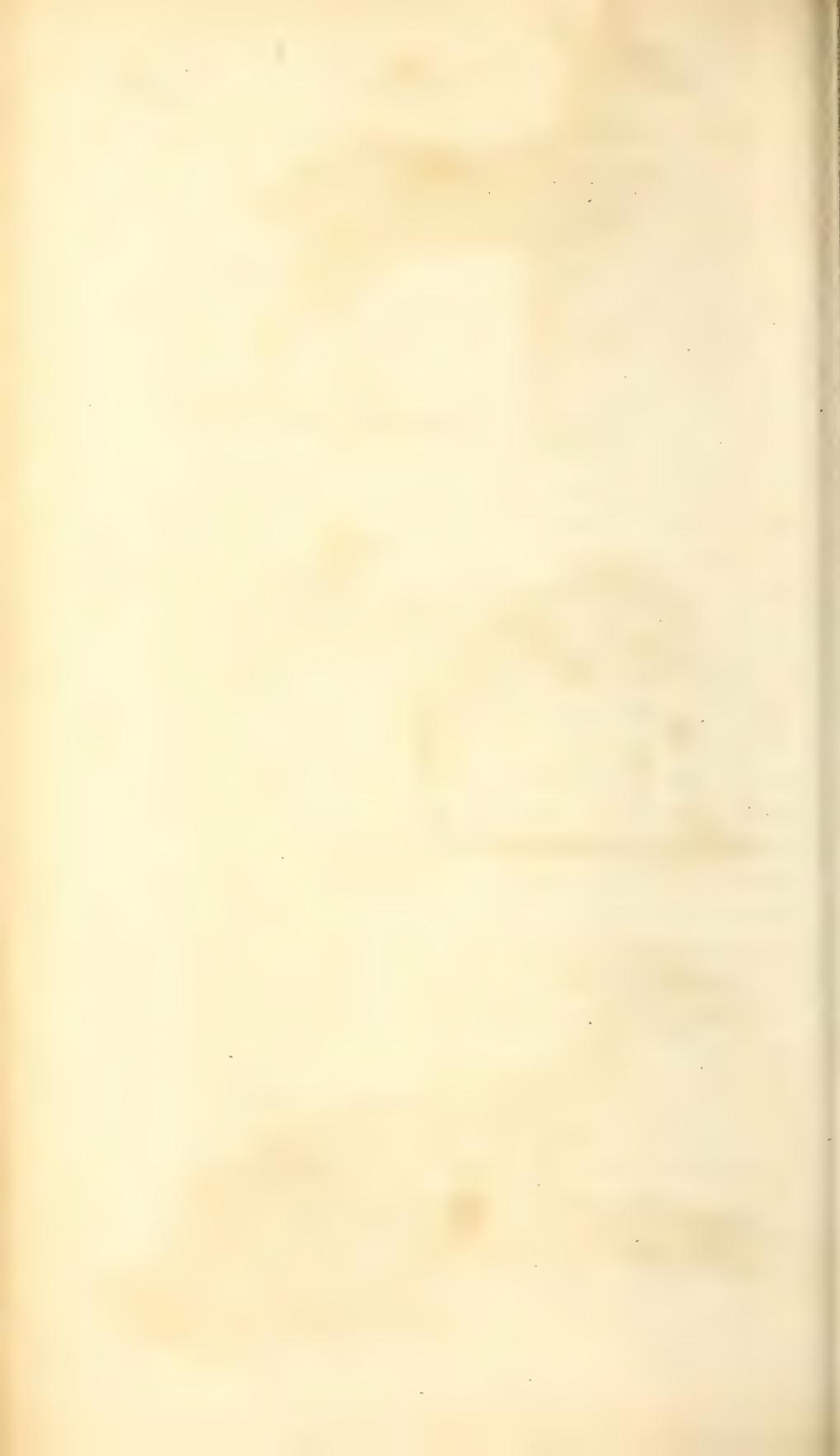
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MEMINNA.



LEVERIAN MUSK.



JAVA MUSK.

Moschus Javanicus. *M. supra ferrugineus, subtus longitudinaliter albus, cauda longiuscula villosa subtus et apice alba, unguis succenturiatis exiguis.* Lin. Syst. Nat. Gmel. p. 174. Pall. spic. Zool. 12. p. 18. 13. p. 28.

Ferruginous Musk, longitudinally white beneath, with villose tail, white beneath and at the tip, and small appendicular hoofs.

Le Chevrotain de Java. Buff. Suppl. 6. p. 229. pl. 30.

THIS species, which, as its name imports, is a native of the island of Java, appears to have been first described by Dr. Pallas, in his work entitled *Spicilegia Zoologica*. Its size is that of a rabbet, and its general colour ferruginous brown, with blackish hairs intermixed, and whitish beneath, with a pair of longitudinal white stripes running down on each side the lower part of the neck ; the tail is white beneath and at the tip : the feet, which nearly resemble those of the Pygmy Musk, are yet furnished with very small appendicular hoofs. This animal is introduced into the sixth supplementary volume of Buffon, and is figured under the name of *Chevrotain de Java*. It appears to be the animal of which Mr. Pennant quotes a specimen in the Leverian Museum, and which, through some oversight, has been described by him in his History of Quadrupeds, and by myself in the Naturalist's Miscellany, as the Moschus Pygmæus ; the circumstance of the appendicular or false hoofs having been, through inadvertance, overlooked.

The Count de Buffon considers it as a variety only of the *Meminna* before described.

AMERICAN MUSK.

Moschus Americanus. M. rufo-fuscus, ore nigro gula alba.

Lin. Syst. Nat. Gmel. p. 174. Erxl. mamm. p. 324. n. 4.

Rufous-brown Musk, with black muzzle and white throat.

Brasilian Musk. *Pennant Quadr. 1. p. 126.*

THE American Musk is confined to the Southern parts of that continent, and is principally found in Guiana and Brasil. Mr. Pennant describes it as of the size of a Roebuck, with ears four inches long; the veins very apparent: eyes large and black; nostrils wide; space about the mouth black: hind legs longer than the fore; tail six inches long; white beneath: hair on the whole body short and smooth: head and neck tawny, mixed with ash-colour: back, sides, chest, and thighs, of a bright rust-colour: lower part of the belly and insides of the thighs white. Marcgrave says the throat and under side of the neck are also white.

This animal, says Mr. Pennant, is excessively timid, and most remarkably active and swift, and can stand, like a goat, with all the four legs together on the point of a rock. They are said to be often seen swimming rivers, and are at that time easily taken. The Indians hunt them, and their flesh is esteemed very delicate. The French

of Guiana call them Biches or Does, because, notwithstanding their resemblance to Deer, both sexes are without horns. Both Mr. Pennant and Gmelin, in his edition of the *Systema Naturæ*, seem to consider a small spotted species figured by Seba as the same with this: but it appears, at least so far as size and colour can constitute a difference, to be very distinct.

LEVERIAN MUSK.

Moschus Delicatulus. M. fusco-ferrugineus, supra maculis albis notatus. Museum Leverianum, vol. I. p. 149. t. 36.

Ferruginous-brown Musk, spotted above with white.

Small spotted Musk. *Museum Leverianum I. p. 151. pl. 36.*

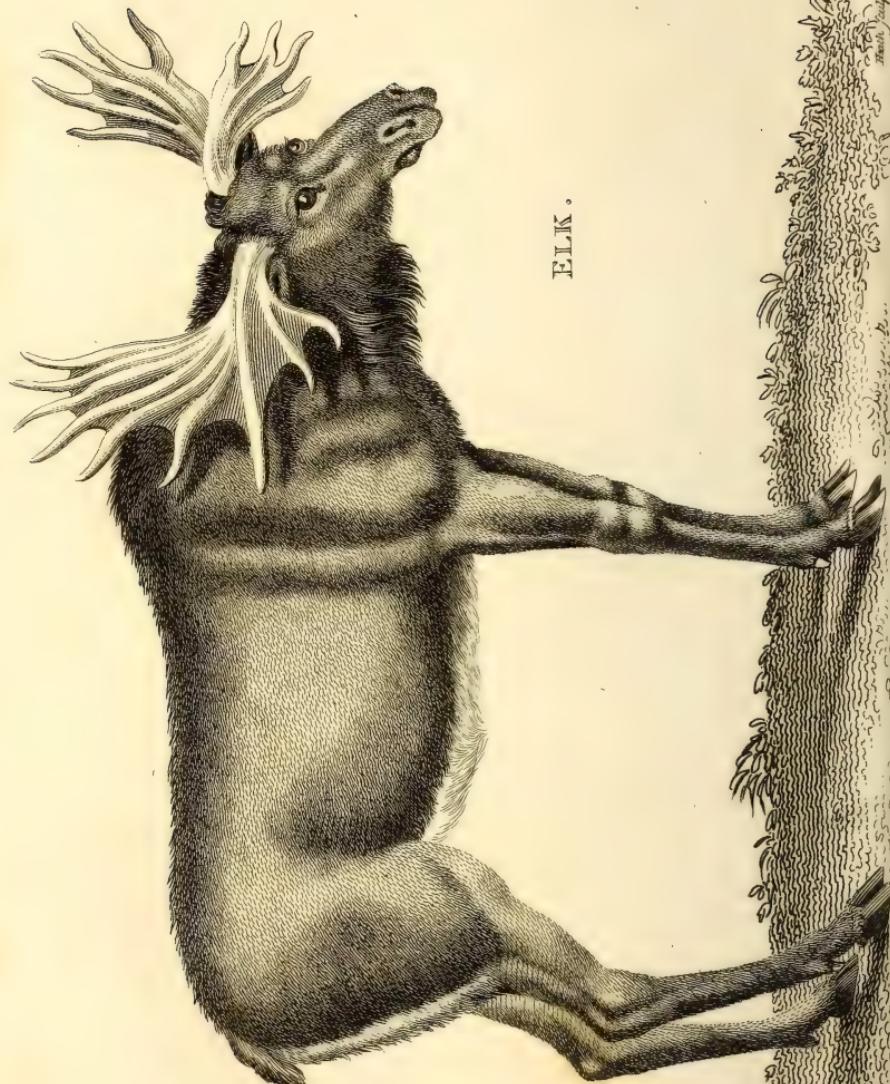
Cervula Surinamensis subrubra albis maculis notata. Seb. mus.

I. p. 71. t. 44. f. 2.

THIS species, if such it really be, seems to have been first figured by Seba, who assures us that it is a native of Surinam, and describes it as of a ferruginous colour, thickly spotted with white, except on the head, breast, and belly. He is not very clear in his expressions relative to its size, but it seems to rank among the very small species, such as the *Javanicus*, *Pygmæus*, &c. The animal described and figured in the first volume of the *Museum Leverianum* under the title of *Moschus delicatulus* or *small spotted Musk*, appears so very nearly allied to that of Seba, that it is in all probability the same. It is, however, whitish beneath the neck and breast, and the tail is a

trifle longer and thinner than in Seba's figure, and not so well covered with hair. In size it scarcely exceeds that of the Pygmy Musk.

The figure given in the Museum Leverianum is introduced by Mr. Schreber into his work on Quadrupeds under the same title, viz. *Moschus delicatulus*. I must, however, confess myself to be not without some suspicion, from the fineness and closeness of the hair, in the above-mentioned specimen, that it is rather a very young animal than of its true size: it must consequently be considered as doubtful. In the form of its teeth it nearly resembles the *M. Javanicus* and some others, having the two middle cutting-teeth very broad. For the satisfaction of the reader, the figure is copied from the Museum Leverianum into the present work.



ELK.

Frankl. Sculp.

CERVUS. DEER

Generic Character.

<i>Cornua solida, tenera corio hirto tecta apiceque crescentia, denudata, annua, furcata.</i>	<i>Horns solid, covered while young with a hairy skin, growing from the top, naked, annual, branched.</i>
<i>Dentes Primores inferiores octo.</i>	<i>Front-teeth in the lower jaw eight.</i>
<i>Laniarii nulli (interdum solitarii superius).</i>	<i>Canine-teeth none (sometimes single in the upper jaw).</i>

ELK.

Cervus Aces. C. cornibus acaulibus palmatis, caruncula gutturali.

Lin. Syst. Nat. p. 92.

Deer with stemless palmated horns, and guttural caruncle.

Alce. Gesn. Quadr. 1. p. 1. Aldr. bisulc. p. 866. Jonst.

Quadr. t. 30, 31.

L'Elan. Buff. 12. p. 79. and Suppl. 7. p. 318. 320. pl. 80.

Elk. Pennant Quadr 1. p. 105.

Moose Deer. Dudley. Phil. Trans. No. 368. p. 165. Dale

Phil. Trans. No. 444. p. 384. Josselyn Voy. New Engl. p. 88.

Cervus Alces. The Elk. Museum Leverianum, vol. 1. p. 33. pl. 8.

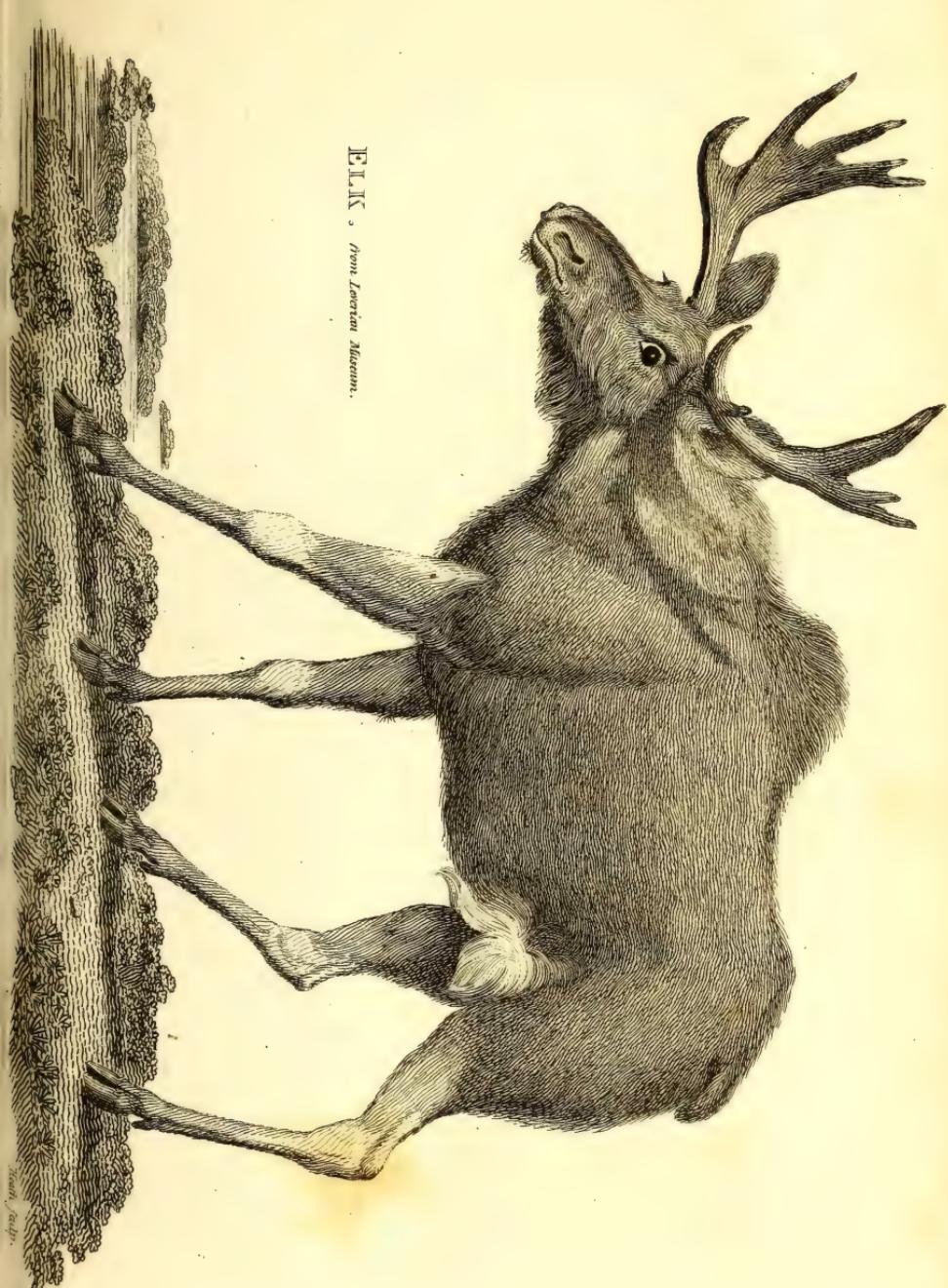
THE Elk, by far the largest animal of this genus, is, when full grown, scarcely inferior to a horse in size. It is common to both continents, inhabiting only the coldest regions, and is ob-

served to arrive at a greater magnitude in Asia and America than in Europe. In its shape it is much less elegant than the rest of the deer tribe, having a very short and thick neck, a large head, horns dilating almost immediately from the base into a broad palmated form, a thick, broad, heavy upper lip, hanging very much over the lower, very high shoulders, and long legs. Notwithstanding its awkward proportions, it is, however, of a noble and majestic appearance. It is also a mild and harmless animal, and principally supports itself by brousing the boughs of trees in the vast and dreary forests of the frozen zone.

The colour of the Elk is a dark, greyish brown, much paler, or inclining to whiteness on the legs and beneath the tail. The hair, which is of a strong, coarse, and elastic nature, is much longer on the top of the shoulders and on the ridge of the neck than on other parts, forming a kind of stiffish mane: beneath the neck the hair is also of considerable length, and in some specimens of the animal, a sort of caruncle or pendent excrescence, covered with long hair, is seen hanging from beneath the throat*: the eyes and ears are large; the hoofs broad, and the tail extremely short. The greatest height of the Elk is, according to Mr. Pennant, about seventeen hands, and its

* This indeed forms a part of the specific character, as given by Linnæus; yet it seems not to take place in all individuals, and may probably be more visible or protuberant at some particular seasons than at others.

ELK.
Moose or Wapiti.





greatest weight about 1229 pounds. The horns have been known to weigh fifty-six pounds, and to measure each thirty-two inches in length. The female is rather smaller than the male, and has no horns.

In Europe the Elk is found chiefly in Sweden, Norway, and some parts of Russia. In Asia it occurs in the woody tracts of the Russian dominions, and in Siberia in particular is found of gigantic magnitude. In America it seems to be most common in Canada, and the country round the great lakes, and is called by the name of Moose-Deer. The Elk chuses its residence in the midst of forests, for the convenience of brousing the boughs of trees ; for it grazes somewhat difficultly on account of its short neck and long legs. Its general pace is described to be a high, shambling, but very swift trot, the feet being lifted up very high, and the hoofs clattering* much during their motion, as is the case also with the Rein-Deer. They feed principally by night, and whenever they graze are observed to chuse an ascending ground, for the greater convenience of reaching the surface with their lips.

The Elk, though naturally of an inoffensive and peaceable disposition, displays a high degree of courage, and even ferocity, when suddenly attacked ; defending himself with great vigour, not

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* This clattering of the hoofs is denied by some authors, but it is particularly affirmed of the Moose by Mr. Pennant in his Arctic Zoology.

only with his horns, but also by striking violently with his fore feet, in the use of which he is so dextrous as easily to kill a dog, or even a wolf, at a single blow.

The chace of the Elk or Moose forms an important occupation among the natives of North America, and is performed in different methods. First, before the rivers and lakes are frozen; when multitudes of the savages assemble in their canoes, and form with them a vast crescent, each horn touching the shore. Another party perform their share of the chace among the woods; surrounding an extensive tract, letting loose their dogs, and pressing towards the water with loud cries. The animals, alarmed by the noise, fly before the hunters, and plunge into the lake, where they are killed by the persons in the canoes, prepared for their reception, with lances and clubs.

The other method is more artful. The savages enclose a large space with stakes, hedged with branches of trees, forming two sides of a triangle: the bottom opens into a second space completely triangular. At the opening are hung numbers of snares made of slips of raw hides. The Indians, as before, assemble in great troops, and with all kinds of noises drive into the first inclosure not only the Mooses, but the other kinds of deer which abound in the country: some in forcing their way into the farthest triangle are caught in the snares by the neck or horns; and those which escape the snares, and pass the little opening, find their fate from the arrows directed at them from all quarters.

They are also often killed with the gun. When first dislodged, the animal falls down or squats, as if disabled, for a moment or two, at which instant the sportsman fires: if he misses, the Moose sets off in a most rapid trot, making, like the reindeer, a prodigious clattering with the hoofs, and will run perhaps twenty or thirty miles before it comes to bay, or takes to the water. But the usual time for this diversion is the winter. The hunters avoid entering on the chace till the sun is strong enough to melt the frozen crust with which the snow is covered; otherwise the animal can run over the firm surface: they wait till it becomes soft enough to impede the flight of the Moose, which sinks up to the shoulders, flounders, and gets on with great difficulty. The hunter pursues at his ease on his broad rackets or snow-shoes, and makes a ready prey of the distressed animal.

The figure of the Elk given in the 12th vol. of the Count de Buffon's Natural History, is so unlike the animal, that I can hardly conceive it to represent the real Elk, but rather the large American Deer or Orignal, since the neck, instead of being very thick and short, as in the Elk, is, on the contrary, represented as of a slender and highly elegant shape, and pretty well represents that of the animal before mentioned. In the 7th supplemental volume is, however, given a tolerable figure of a young Elk; but the animal at that period differs considerably in its appearance from that which it assumes when full grown.

We are informed on the authority of Mr. Oedman, as communicated to Mr. Pennant, that the Elk is now become very rare in the southern parts of Sweden, though by no means uncommon in the northern districts.

An ancient superstition has prevailed in many parts of the European world, that the Elk is naturally subject to the epilepsy; and that it finds its cure by scratching its ear with the hoof till it draws blood. In consequence of this notion, the hoof of the Elk forms an article of the ancient *materia medica*. This absurdity seems to have originated from the circumstance which is said often to take place when the Elk is first started, viz. that the animal, through sudden fear or surprise, falls down, as if disabled, and does not recover the complete use of its limbs till some seconds have elapsed. A piece of the hoof was anciently set in a ring, and worn as a preservative against the complaint above mentioned; and sometimes the hoof was held in the patient's hand, or applied to the pulse, or put to the left ear, or suspended from the neck in such a manner as to touch the breast, &c. &c. &c.

In Josselyn's *Voyages to New England** the American Moose is mentioned as being sometimes

* This book, which is written in an odd, rambling, quaint style, was published in 1674. The account of the Moose is as follows:

"The *Moose* or *Elke* is a creature, or rather, if you will, a monster of superfluity; a full grown *Moose* is many times bigger than an English *Oxe*, their horns as I have said elsewhere, very big (and brancht out into palms) the tips whereof are sometimes found to

seen thirty-three hands, or twelve feet high, and other writers have said that its horns have been known to weigh between three and four hundred pounds ; but these are accounts which seem to deserve but little credit, and are probably owing to the vague and uncertain descriptions communicated by the Indian tribes.

That some animal, however, of the deer kind, far superior in size to any at present known, does either exist, or has at least existed, is sufficiently proved by the enormous fossil horns which are often found at a considerable depth in the bogs of Ireland, as well as in America and other parts of the world ; and which have by many been supposed to belong to the Elk or Moose. Their appearance, however, differs so considerably from

be two fathom asunder, (a fathom is six feet from the tip of one finger to the tip of the other, that is four cubits,) and in height from the toe of the fore-feet to the pitch of the shoulder twelve foot, both which hath been taken by some of my *sceptique* readers to be monstrous lyes. If you consider the breadth that the beast carrieth, and the magnitude of the horns, you will be easily induced to contribute your belief. And for their height since I came into England I have read Dr. Schroderus his chymical dispensatory translated into *English* by *Dr. Rowland*, where he writes *that when he lived in Finland under Gnstavus Horn, he saw an Elke that was killed and presented to Gustavus his mother, seventeen spans high*. Lo you now sirs of the gibing crue, if you have any skill in mensuration, tell me what difference there is between seventeen spans and twelve foot. There are certain transcendentia in every creature, which are the indelible characters of God, and which discover God ; there's a prudential for you, as *John Rhodes the fisherman used to say to his mate Kitt Lux.*"—*Account of two voyages to New England, &c. by JOHN JOSSELYN, gent. p. 88.*

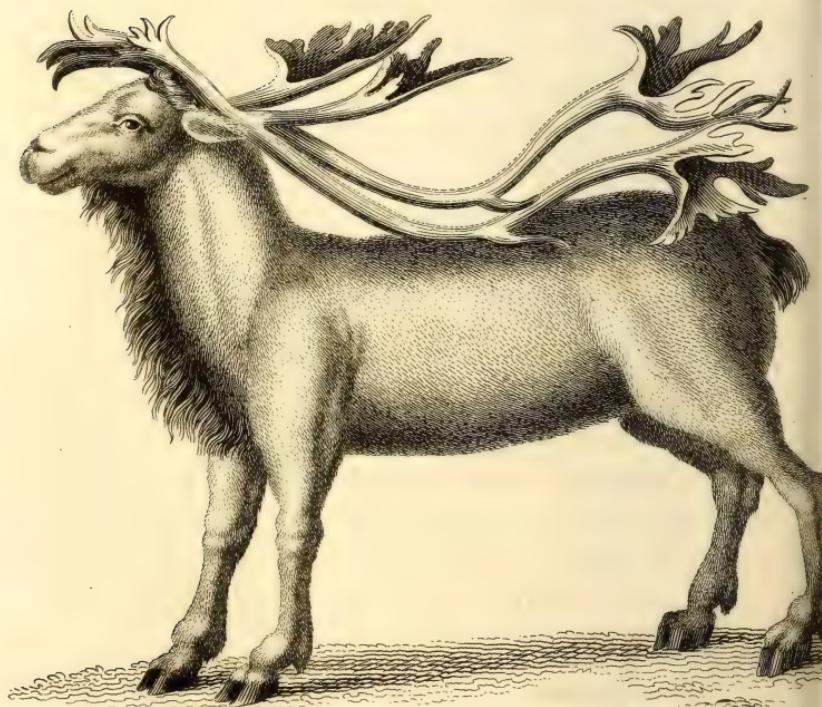
the horns of these animals, that it seems now pretty generally agreed among naturalists, that they must have belonged to some species either quite extinct or hitherto undiscovered. They are much longer and narrower in proportion than those of the Elk, and are furnished with brow antlers; and the processes or divisions into which the sides and extremities run are much longer, sharper, and more distant in proportion. These horns have been sometimes found of the length of eight feet each; and have measured fourteen feet between tip and tip, when adhering to the skull. The whole skeleton is said to have been sometimes found also. Specimens of these horns occur in most of our museums, and are justly considered as some of the most interesting examples of fossil zoology. It is, indeed, impossible to view without astonishment such immense productions, and at the same time to recollect that they were annually shed and reproduced.

It was probably some specimen of this kind that gave rise to the lines of Waller:

“ So we some antique hero’s strength
Learn by his lance’s weight and length ;
As these vast beams express the beast
Whose shady brows alive they drest.
Such game, while yet the world was new,
The mighty Nimrod did pursue.
What huntsman of our feeble race,
Or dogs, dare such a monster chace ?
Resembling, at each blow he strikes,
The charge of a whole troop of pikes.
O fertile head ! which every year
Could such a crop of wonder bear !



REIN DEER



White Ant.

The teeming earth did never bring
So soon, so hard, so huge a thing:
Which, might it never have been cast
(Each year's growth added to the last),
These lofty branches had supply'd
The earth's bold son's prodigious pride:
Heav'n with these engines had been scal'd,
When mountains heap'd on mountains fail'd."

REIN DEER.

Cervus Tarandus. *C. cornibus ramosis recurvatis teretibus; summitatibus palmatis.* *Lin. Syst. Nat.* p. 98.

Deer with branched, recurvate, round horns, with palmated extremities.

Tarandus. *Plin. Hist. Nat.* 8. c. 34. *Aldr. bisulc.* p. 859. and *fig.* p. 861. *Jonst. Quadr.* p. 90. t. 37. 36.

Rangifer. *Gesn. Quadr.* p. 950. *ic. Quadr.* p. 62.

Cervus rangifer. *Ray. syn. Quadr.* 88.

Le Renne. *Buff.* 12. p. 79. and *Suppl.* 3. p. 132. *pl.* 18.

Rein Deer. *Pennant Quadr.* 1. p. 111.

THE Rein Deer, like the Elk, is an inhabitant of the northern regions. In Europe its chief residence is in Norway and Lapland. In Asia it frequents the north coast as far as Kamtschatka, and the inland parts as far as Siberia. In America it occurs in Greenland, and does not extend farther south than Canada *. The height of a full grown Rein Deer is, according to Mr. Pennant, four feet six inches: the body is of a somewhat thick and square form; and the legs shorter in proportion than those of the stag. Its general

* Pennant.

colour is brown above and white beneath, but as it advances in age, it often becomes of a greyish white, and sometimes almost entirely white: the space about the eyes is always black: the hair on the under part of the neck is of much greater length than the rest, and forms a kind of hanging beard in that part: both sexes are furnished with horns, but those of the male are much larger and longer than those of the female: the hoofs are long, large, and black, as are also the false or secondary hoofs behind; and these latter, while the animal is running, make by their collision a remarkable clattering sound, which may be heard at a considerable distance.

No animal of this tribe appears to vary so much in the form and length of its horns as the Rein Deer, the individuals of which, according to age and other circumstances, present so different an appearance in this respect, that a person inconsistant in the history of the animal, would, at first sight, hardly suppose them to belong to the same species. In general the horns are remarkable for their great length, and proportional slenderness, and are furnished with a pair of brow antlers, with widely expanded and palmated tips directed forwards: towards the middle part of the horn rises another large branch, directed upwards, and branched at the tip; the remainder of the horn runs on to a great length in a backward direction, and is more or less branched at the end: In the young and middle aged Rein Deer the horns are remarkable for their slender form; but as the animal advances in age they are of a stronger appear-

ance, as in the annexed figure of the male, which was first given by Gesner, and which is pronounced by Linnæus a good representation: the figure of the female is taken from the celebrated work of Ridinger, and has also been published in the third supplemental volume of the Count de Buffon's Natural History.

The Rein Deer is celebrated for its services to the simple and harmless inhabitants of Lapland, who, undisturbed by the sound of war, or the troubles of commerce, lead a kind of pastoral life, even within the frozen limits of the Arctic circle, and have no other cares than those of providing for the rigours of their long winter, and of rearing and supporting their numerous herds of Rein Deer, which may be said to constitute almost their whole wealth, and which are used not only for the purposes of food, but for travelling occasionally over that frozen country during the winter season.

Linnæus, in his *Flora Lapponica*, gives a very flattering description of the felicity of a Laplander's life:

“O felix Lappo! qui in ultimo angulo mundi
sic bene lates contentus et innocens. Tu nec
times annonæ caritatem, nec Martis prælia, quæ
ad tuas oras pervenire nequeunt, sed florentissi-
mas Europæ provincias et urbes, unico momento,
sæpe dejiciunt, delent. Tu dormis hic sub tua
pelle ab omnibus curis, contentionibus, rixis liber,
ignorans quid sit invidia. Tu nulla nosti nisi
tonantis Jovis fulmina. Tu ducis innocentissi-

mos tuos annos ultra centenarium numerum cum
facili senectute et summa sanitate. Te latent
myriades morborum nobis Europæis communes.
Tu vivis in sylvis, avis instar, nec sementem facis,
nec metis, tamen alit te Deus optimus optime.
Tua ornamenta sunt tremula arborum folia, gra-
minosique luci; tuus potus aqua crystallinæ pel-
luciditatis, quæ nec cerebrum insania adficit, nec
strumas in Alpibus tuis producit. Cibus tuus est
vel verno tempore piscis recens, vel æstivo serum
lactis, vel autumnali tetrao, vel hyemali caro re-
cens rangiferina absque sale et pane, singula vice
unico constans ferculo, edis dum securus e lecto
surgis, dumque eum petis, nec nosti venena nos-
tra, quæ latent sub dulci melle. Te non obruit
scorbutus, nec febris intermittens, nec obesitas,
nec podagra, fibroso gaudes corpore et alacri, ani-
moque libero. O sancta innocentia, estne hic tuus
thronus inter Faunos in summo septentrione, inque
vilissima habita terra? numne sic præfers stragula
hæc betulina mollibus serico tectis plumis? Sic
etiam credidere veteres, nec male."

Of this eulogy the English reader must be con-
tent with the following somewhat abbreviated
translation, or rather imitation.

O favour'd race! whom partial Heav'n design'd
To free from all the cares that vex mankind!
In life's mad scenes while wayward nations join,
One silent corner of the world is thine;
From busy toil, from raging passions free,
And war, dire stain of laps'd humanity!
Far from thy plains the hideous monster roves,
Nor dares pollute thy consecrated groves.

Indulgent Nature yields her free supplies,
And bids thy simple food around thee rise.
Along thy shores the scaly myriads play,
And gathering birds pursue their airy way.
Gurgles to quench thy thirst the crystal spring,
And ranging herds their milky tribute bring.
No fell disease attacks thy hardy frame,
Or damps with sullen cloud the vital flame;
But flies to plague amid their tainted sky
The sick'ning sons of full-fed luxury.
Thy aged sires can boast a cent'ry past,
And life's clear lamp burns briskly to the last.
In woods and groves, beneath the trembling spray,
Glides on, in sweet content, thy peaceful day:
Gay exercise with ruddy health combin'd,
And, far beyond the rest! the freedom of the mind.
Here stands secure, beneath the northern zone,
O sacred Innocence, thy turf-built throne:
'Tis here thou wav'st aloft thy snowy wings,
Far from the pride of courts and pomp of kings.

It is true there are some drawbacks on this scene of felicity. The winter may be said to continue nearly nine months, and is of a rigour unknown in the more southern regions of the world: the sun is invisible for a certain period, and the moon and stars, with the frequent coruscations of the aurora borealis, and the reflection from the snow, constitute the only light afforded by Nature. During this season, therefore, the inhabitants must of necessity experience all the horrors attendant on a northern winter. The short summer, on the contrary, when once fairly commenced, is scarce less oppressive, from the innumerable legions of mosquitoes, which abound to

such a degree in the marshy districts, as to oblige the inhabitants, in order to walk abroad with common comfort, to anoint their faces with a mixture of tar and milk, which composition is in universal use at that season ; men, women, and children, being alike smeared with the black cosmetic, as Linnæus quaintly terms it. In reality, therefore, the great happiness of the Laplanders consists in being free from the calamities of war, from most of the diseases of Europe, and in being ignorant of the wants of luxury, arising from the more artificial life of polished nations.

Their manner of travelling in sledges, drawn by Rein Deer, has been described by various authors.

There are in Lapland two races of Rein Deer, the wild and the tame. The latter are far preferable to the former for drawing the sledge, to which the Laplander accustoms them betimes, yoking them to it by a strap, which goes round the neck, and comes down between the legs. The sledge is extremely light, and covered at the bottom with the skin of a young deer, the hair turned to slide on the frozen snow. The person who sits on this guides the animal with a cord, fastened round the horns, and encourages it to proceed with his voice, and drives it with a goad. Some of the wild breed, though by far the strongest, are yet found refractory, and often turn upon their drivers, who have then no other resource but to cover themselves with the sledge, and let the animal vent its

fury upon that. But it is otherwise with those that are tame; no creature can be more active, patient, and willing: when hard pushed, they will trot nine or ten Swedish miles, it is said, or between fifty and sixty English miles, at one stretch; but in such a case the poor obedient creature fatigues itself to death; and if not killed immediately by its owner, will die in a day or two after. In general they can go about thirty miles without halting, and without any great or dangerous efforts. This, which is the only way of travelling in Lapland, can be performed to advantage only when the snow is glazed over with ice: and though it be a speedy method of conveyance, yet it is inconvenient, dangerous, and troublesome.

The chief food of the Rein Deer is a species of Lichen, commonly called the Rein-Deer moss, which covers vast tracts of the northern regions, and on which these animals particularly delight to brouze. In summer they readily obtain it in vast plenty, and in winter dig with their horns through the snow to arrive at it.

With the Laplanders this animal is at once the substitute of the Horse, the Cow, the Sheep, and Goat.

Those innocent people have subdued it to various uses, and reclaimed it from its wild state. They devote their whole care to its management; occasionally housing and nursing their herds during the winter, and attending them during the summer to the tops of their mountains, and to the sides of their clear lakes and streams, which are

said to be often bordered with native* roses. They understand all the arts of the dairy, and from the milk of their deer prepare many of their most nourishing and agreeable repasts.

STAG.

Cervus Elaphus. *C. cornibus ramosis, totis teretibus recurvatis.*

Lin. Syst. Nat. p. 98.

Rufous-brown Deer, with cylindric, recurvate, branching horns.

Cervus. *Plin. Hist. Nat. 8. ch. 32. Gesn. Quadr. p. 354. Aldr. bisulc. p. 769 fig. p. 774. Jonst. Quadr. p. 82. t. 32. 35.*

Le Cerf. *Buff. 6. p. 63. pl. 9, 10.*

Stag or Red Deer. *Penn. Brit. Zool. 1. 35. No. 6.*

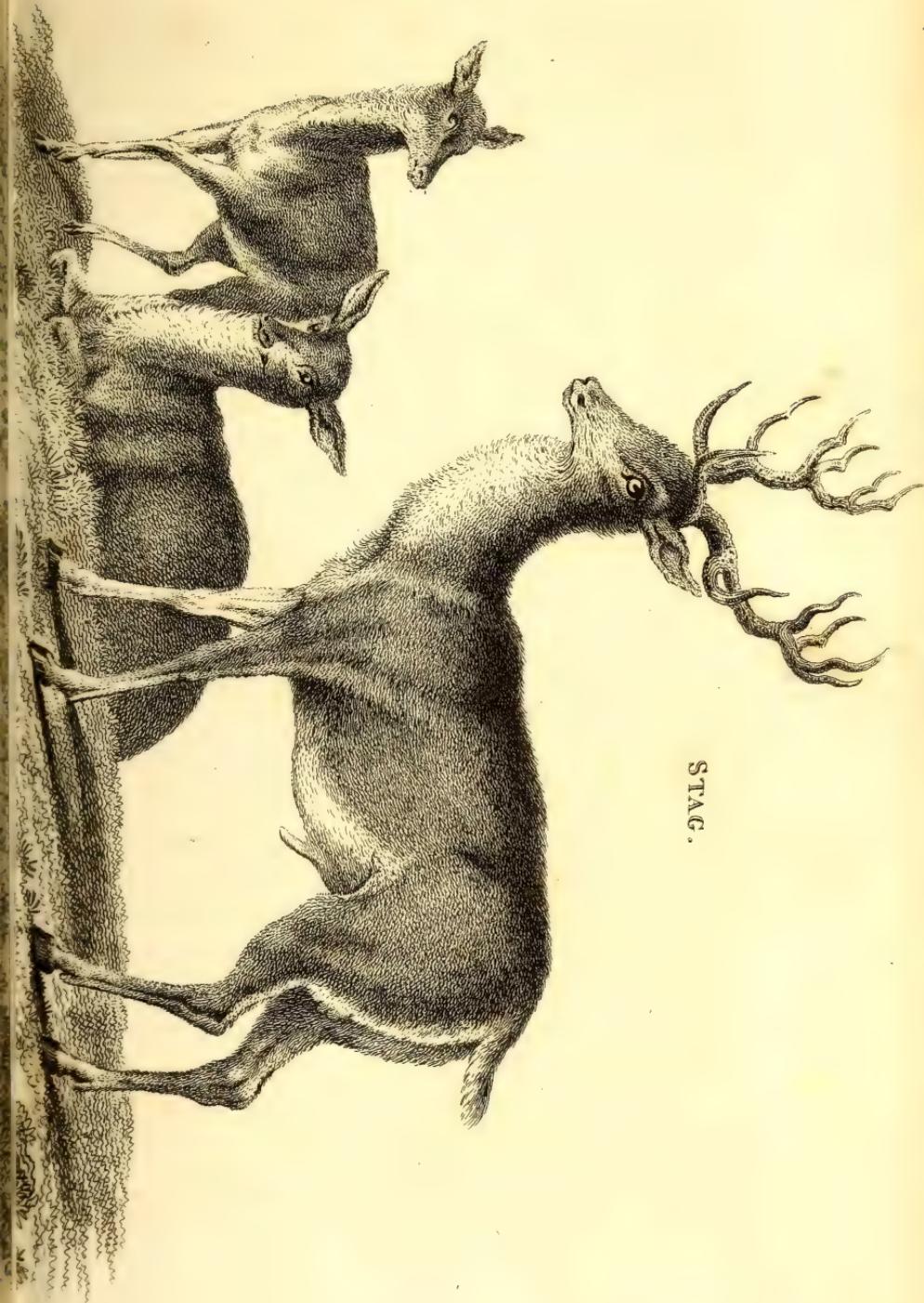
Stag. *Pennant Quadr. 1. p. 114.*

The Stag, Hart, or Red Deer, *male.* The Hind, *female.*

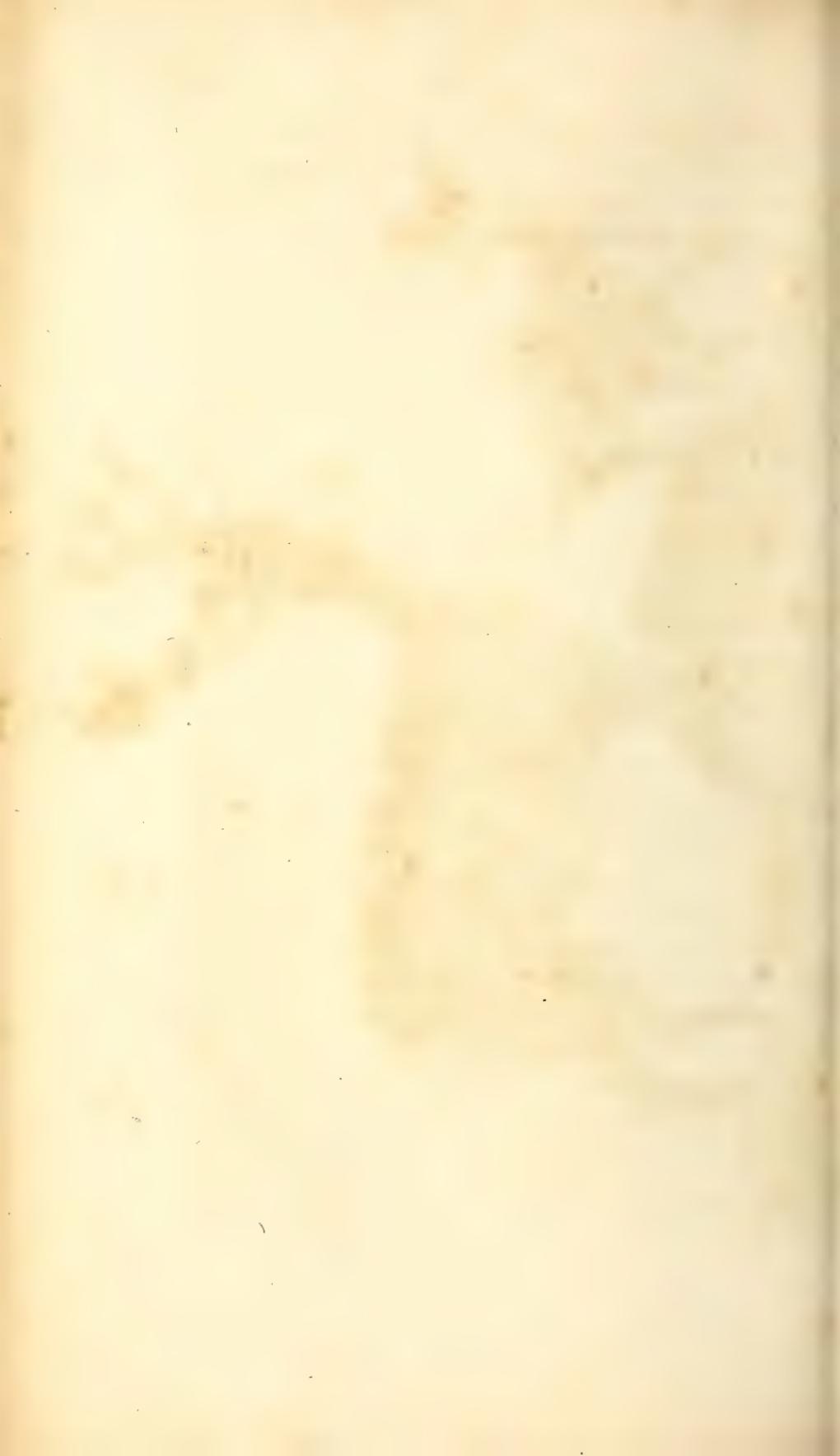
THE Stag, says Buffon, is one of those innocent and peaceable animals that seem destined to embellish the forest, and animate the solitudes of Nature. The elegance of his form, the lightness of his motions, the strength of his limbs, and the branching horns with which his head is decorated, conspire to give him a high rank among quadrupeds, and to render him worthy the admiration of mankind.

* This remarkable circumstance is mentioned by Maupertuis in his work on the figure of the earth. He assures us that on the banks of the river Tenglio in Lapland he saw roses † of as bright a red as he had ever observed in gardens.

† I know not what kind of roses these could be: Linnæus commemorates no such in his Flora Lapponica.



STAG.



The Stag varies both in size and colour in different countries, but is generally about three feet and a half high; and of a reddish brown colour, whitish beneath. Sometimes it is of a very dark or blackish brown; sometimes, of a pale or yellow-brown, and lastly, instances occur of Stags entirely white. The horns vary as to size and number of ramifications according to the age of the animal, and, as in others of this genus, are annually cast. The general number of branches in a well grown Stag seems to be six or seven, but they are sometimes far more numerous*.

The Stag is a native of almost all the temperate parts of Europe, as well as of Asia. It also occurs in North America, where it occasionally arrives at a larger † size than in the old continent, except in Siberia, where, according to Mr. Pennant, it is found of gigantic magnitude. In America the Stag, like many other native animals, has gradually receded from particular regions in proportion to increased cultivation. We are informed by Kalm, that an old Indian, who was living in the year 1748, had killed several Stags on the spot where the city of Philadelphia now stands.

The Stag is supposed to have been originally introduced into our own island from France, where it is very common. Mr. Pennant remarks, that

* Many curious varieties of this kind may be found in the works of Ridinger.

† Lawson, on the contrary, says the American stag is smaller than the European, though fatter.

it is still found in a state of nature in the Highlands of Scotland. In reality it has been in a great degree expelled from most parts of the kingdom to make way for the common or Fallow Deer, the venison of which is far superior to that of the Stag, and the animal itself of a more placid and manageable disposition.

The Stag, like some others of this tribe, is naturally gregarious; assembling in herds in the forests, and brousing the leaves of young shoots of trees, &c.

“ The size and stature of these animals (says Buffon) differ according to the places they inhabit: those which frequent the valleys, or hills abounding in grain, are larger and taller than those which feed upon dry and rocky mountains. The latter are low, thick, and short: neither are they equally swift; though they run longer than the former: they are also more vicious, and have longer hair on their heads: their horns are commonly short and black, like a stunted tree, the bark of which is always of a darker colour; but the horns of the stags which feed in the plains are high, and of a clear reddish colour, like the wood and bark of trees which grow in a good soil. These little squat stags never frequent the lofty woods, but keep always among the coppices, where they can more easily elude the pursuit of the dogs. The Corsican appears to be the smallest of these mountain stags. He exceeds not half the height of the ordinary kind, and may be re-

garded as a terrier among stags. His colour is brown, his body squat, and his legs short; and what convinces me that the size and stature of stags in general depend on the quantity and quality of their food, is, that having reared one at my house, and fed him very plentifully for four years, he was much taller, thicker, and plumper at that age than the oldest stags in my woods, which are, however, of a very good size.

“The Stag appears to have a fine eye, an acute smell, and an excellent ear. When listening, he raises his head, erects his ears, and hears from a great distance. When going into a coppice or other half covered place, he stops to look round him on all sides, and scents the wind, to discover if any object be near that might disturb him. He is a simple, yet a curious and crafty animal. When hissed or called to from a distance, he stops short, and looks steadfastly, and with a kind of admiration, at carriages, cattle, or men; and if they have neither arms nor dogs, he moves on unconcernedly, and without flying. He appears to listen with great tranquillity and delight to the shepherd’s pipe*, and the hunters sometimes employ this artifice to encourage and deceive him. In general he is less afraid of men

* In Playford’s Introduction to Music, is the following passage:
“ Myself, as I travelled some years since near Royston, met a herd
of Stags, about twenty, on the road, following a bag-pipe and vio-
lin; which, while the music played, they went forward, when it
ceased, they all stood still; and in this manner they were brought
out of Yorkshire to Hampton-court.”

than of dogs, and is never suspicious, or uses any arts of concealment, but in proportion to the disturbances he has received. He eats slow, and has a choice in his aliments; and after his stomach is full, he lies down and ruminates at leisure. He seems to ruminate with less facility than the ox, and it is only by violent shakes that the stag can make the food rise from his first stomach. This difficulty proceeds from the length and direction of the passage through which the aliment must pass: the neck of the ox is short and strait, but that of the stag is long and arched, and consequently greater efforts are required in rumination.

" In winter and spring the stag does not drink, the dews and tender herbage being sufficient to extinguish his thirst; but during the parching heats of summer he frequents the brooks, marshes, and fountains, and in autumn is so over-heated that he searches every where for water to bathe and refresh his body. He then swims easier than any other time on account of his fatness, and has been observed crossing very large rivers. He leaps still more nimbly than he swims, and when pursued, can readily clear a hedge or pale of six feet high. The food of stags varies according to the season. In autumn they search for the buds of green shrubs, the flowers of broom or heath, the leaves of brambles, &c. During the snows of winter they feed on the bark, moss, &c. of trees, and in mild weather they brouze in the corn fields. In the beginning of spring they go in quest of the catkins of the trembling poplar,

willow, and hazel; the flowers and buds of the cornel, &c. In summer, when they have great choice, they prefer rye to all other grain, and the black berry-bearing Alder (*Rhamnus Frangula*) to all other wood. The flesh of the fawn is very good: that of the female or hind not bad, but of the stag is strong, and of an unpleasant flavour: the skin and the horns are the most useful parts of the animal; the former making a very pliable and durable leather, while the latter are used by cutlers and other artificers for various purposes of manufacture."

Stags in general cast or shed their horns sooner or later in the month of March, in proportion to their ages. At the end of June they are full-grown, and the animal rubs them strongly against the boughs of trees, or any convenient object, in order to free them from the skin, which is now become useless, and by the beginning of August they begin to assume the full strength and consistence which they retain throughout the remainder of the year.

It is hardly necessary to add, that the longevity of the Stag, which became proverbial among the ancients, is, in some degree, a vulgar error; for though the animal, compared with many other quadrupeds, may be justly considered as long-lived, since it is supposed in some instances to arrive at the age of thirty-five or forty years, yet it is by no means possessed of the longevity anciently attributed to it, which is merely a popular preju-

dice, sufficiently contradicted by the experience of later ages. Indeed it should not be forgotten that Aristotle opposed the common prejudice, and contended that the nature of the animal afforded no probable argument in favour of its longevity.

FALLOW DEER.

Cervus Dama. *C. cornibus ramosis recurvatis compressis, summato palmata.* Lin. Syst. Nat. p. 98.

Yellowish-brown Deer, with slightly recurvate, compressed, branching horns, palmated at the top.

Platyceros. Plin. Hist. Nat. 11. c. 37.

Cervus platyceros. Raj. Quadr. p. 85.

Dama vulgaris. Gesn. 335. Aldr. bisulc. 741.

Le Daim & La Daine. Buff. 6. p. 167. pl. 27, 28.

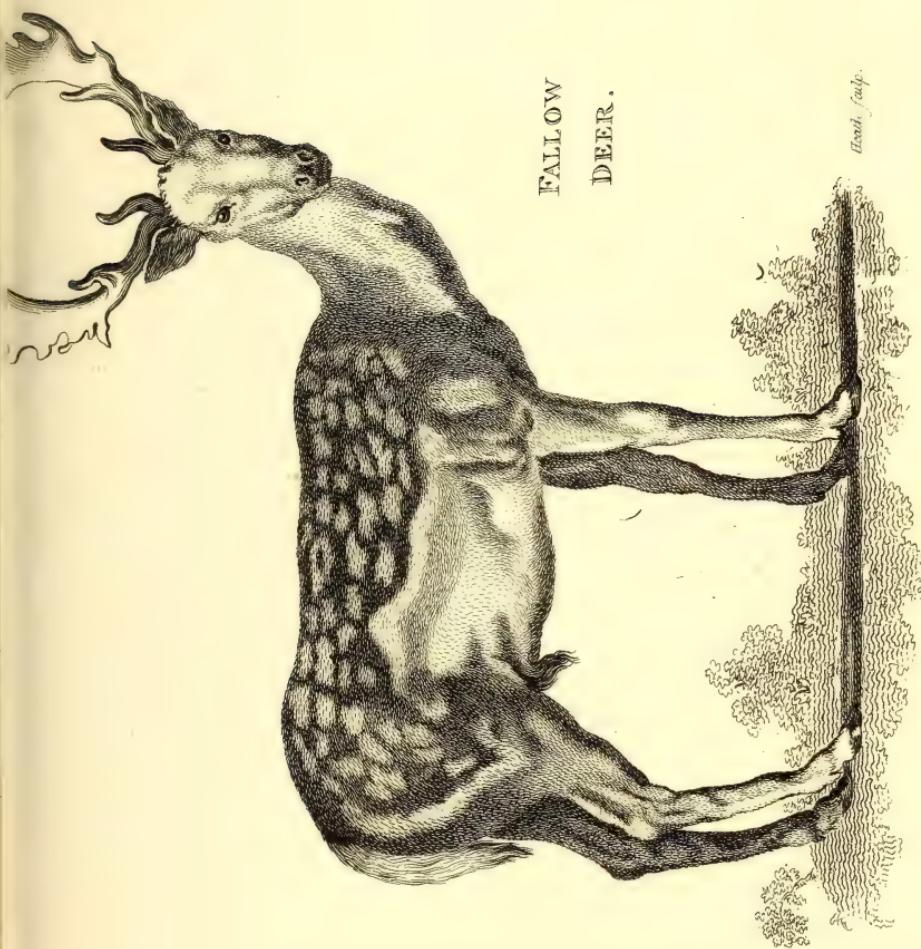
The common Buck and Doe.

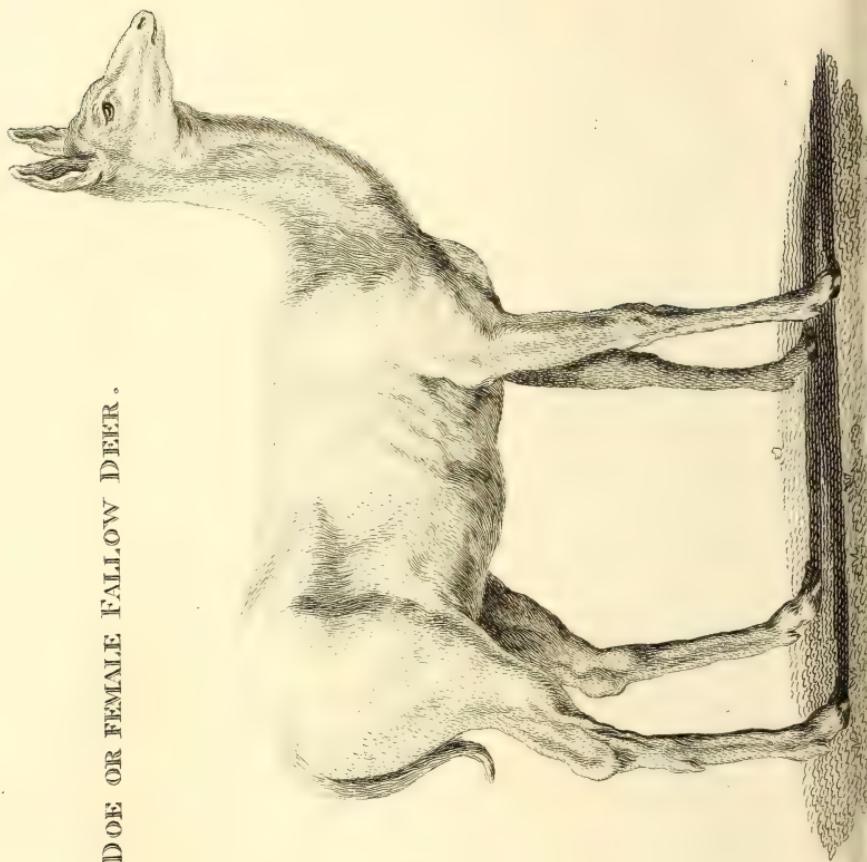
Fallow Deer. Pennant Quadr. 1. p. 113.

THE Fallow Deer is considerably smaller than the Stag, and is of a brownish bay colour, more or less deep in different individuals; whitish beneath, on the insides of the limbs, and beneath the tail, which is somewhat longer in proportion than that of the stag, and is commonly bounded on each side by a descending streak of black, but the principal mark of distinction between this species and the stag, is the form of the horns, which, as in the stag, are peculiar to the male, and are dilated at the upper part, and palmated, or divided into processes which are continued to a considerable distance down the outside of each

FALLOW
DEER.

Hind, face.





DOE OR FEMALE FALLOW DEER.

horn. An antler or simple slender process rises from the base of each, and a similar one at some distance above the first; both pointing somewhat forwards. In its general form the animal greatly resembles the stag, having the same elegance of aspect, with a more gentle disposition.

The Fallow Deer is not so universal as the stag, and is even a rare animal in some parts of Europe, as in France and Germany, but in Spain is said to be found nearly equal to the stag in size. It occurs, according to Mr. Pennant, in the woods of Lithuania and Moldavia, as well as in Greece, Palestine, and the northern parts of China. In America it has never been found, the animals sometimes called American Fallow Deer belonging to a different species, peculiar to that continent.

The manners of the Fallow Deer resemble those of the stag, but it is observed to be less delicate in the choice of its food; eating a variety of vegetables which are refused by the former. It arrives at full growth and perfection in about three years, and is said to live about twenty.

The horns are annually shed, as in the stag, but at a somewhat later period. At their first appearance they resemble a pair of soft tumid knobs or tubercles, and are covered with a villous and very vascular skin: they gradually enlarge, lengthen, and widen at their tops; and when at full growth, the skin, with all its apparatus of vessels, which had served to nourish the horns, being grown useless, is rubbed off by the animal,

the impressions of the blood-vessels still remaining on the complete horn in the form of so many ramified furrows.

VIRGINIAN DEER.

Cervus Virginianus. C. cornibus ramosis antrorsum versis parum palmatis. Lin. Syst. Nat. Gmel. p. 179.

Pale-brown Deer, with slender round branched horns, bending forward, and slightly palmated at the top.

Dama Virginiana. *Raj. Quadr. p. 86.*

Fallow Deer. *Laws. Carol. p. 123. Catesb. Carol. app. p. 28.*

Virginian Deer. *Pennant Quadr. 1 p. 116.*

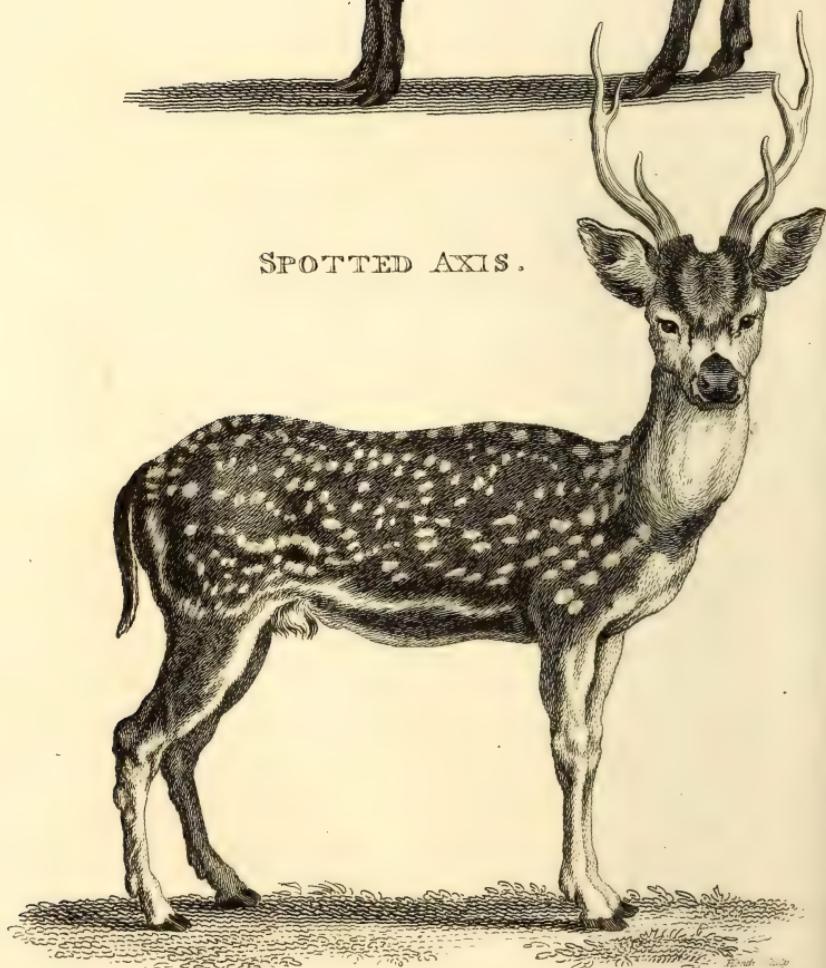
THE Virginian Deer is a native of the northern parts of America, where it is found in vast herds, and is an animal of great importance to the Indian natives, who dry its flesh for their winter provision: the skin also constitutes a great article of commerce, vast numbers being annually imported from the colonies; in the year 1764 not fewer, according to Mr. Pennant, than 25,027 from New York and Pennsylvania.

The size of the animal is that of the Fallow Deer: its colour a light cinereous brown; the head of a deeper cast, and the belly, sides, shoulders, and thighs, whitish, mottled with brown: the tail is about ten inches long, and is dusky above and white below: the horns slender, bending very much forwards, with numerous branches on the interior sides, and no brow antlers.

This species appears to occur in almost all parts



SPOTTED AXIS.



of North America, except Canada, and is found in the greatest abundance in the vast savannas contiguous to the Mississipi and the great rivers which flow into it; grazing in herds innumerable along with stags and bufaloes. They are sometimes tamed, and used by the Indians, after being properly trained, to decoy the wild deer within shot. They are of a restless and wandering disposition, and in hard winters are observed to feed much on the different species of *Usnea* or string-moss, which hangs from the trees. They are also fond of resorting to places impregnated with salt, and in such spots may be seen in great numbers, licking the earth. Such spots are called in America by the name of Licking-places, and the hunters are sure of finding plenty of game there; the animals, though so frequently disturbed, still continuing to frequent their favourite haunts.

SPOTTED AXIS.

Cervus Axis. *C. cornibus ramosis teretibus erectis, summitate bifida, corpore albo-maculato.* Lin. Syst. Nat. Gmel. p. 179. Erxl. manim. p. 312.

Pale rufous brown Deer, spotted with white, with slender trifurcated horns.

Axis. Plin. Hist. Nat. 8. c. 21. Raj. Quadr. p. 89.

L'Axis. Buff. 11. p. 397. pl. 38, 39.

Spotted Axis. Pennant Quadr. 1. p. 117.

THE Axis is one of the most beautiful animals of this genus, and is commonly known by the

name of the *Ganges Stag*. Its size is nearly that of the Fallow Deer, and its colour an elegant light rufous-brown, distinctly and beautifully marked with very numerous white spots: the under parts are paler, and a line of white generally separates the colour of the upper from the lower parts: the tail resembles that of the Fallow Deer, and is reddish above and white beneath.

This species is said to be very common in some parts of India about the banks of the Ganges, and in the island of Ceylon. It is described by Pliny among the animals of India, and is said to have been sacred to Bacchus. It has been introduced into Europe, and is occasionally seen in parks and menageries. It is readily tamed, and seems to suffer but little from a change of climate.

MIDDLE AXIS.

WHETHER this be a variety of the former or specifically distinct does not appear perfectly clear. It is, according to Mr. Pennant, of a middle size, between the *Spotted Axis* and the *Great Axis*, or following kind. In the colour of its hair it resembles the first sort, but is never spotted. It, however, is said to vary into white, in which state it is considered as a great rarity. It inhabits dry hilly forests in Ceylon, Borneo, Celebes, and Java, where it is found in very numerous herds. Its flesh is much esteemed by the natives, and is dried and salted for use.

GREAT AXIS.

THE existence of this species, or variety, is ascertained from a pair of horns in the British Museum, resembling the former kinds in shape, but of larger size: they measure two feet nine inches in length, are of a whitish colour, and are very strong, thick, and rugged. Mr. Pennant conjectures that they were brought from Ceylon or Borneo, having been informed by Mr. Loten, who had long resided in the former of these islands, that a very large kind of stag, as tall as a horse, of a reddish colour, and with trifurcated horns, existed there as well as in Borneo. In Borneo they are said to frequent low marshy tracts, and to be called by the name of Water Stags.

TAILLESS ROE.

Cervus Pygargus. C. cauda nulla, cornibus trifurcatis. Lin. Syst.

Nat. Gmel. p. 175. Pall. it. 1. p. 97.

Tailless brown Deer, yellowish beneath, white behind, with trifurcated horns, and nose surrounded with black.

Cervus Aha. S. G. Gmelin it. 3. p. 496. t. 56.

Tailless Deer. *Pennant Quadr. 1. p. 121.*

THIS species is described in the first volume of Dr. Pallas's Travels, and is a native of the mountainous parts of Hircania, Russia, and Siberia; inhabiting the loftiest parts of those regions, but

in winter descending into the plains, the hair at that season assuming a hoary appearance. In its form it resembles the Roebuck, but is larger. Its colour is brown, with the outsides of the limbs and under parts of the body yellowish : the hinder parts of the thighs are white, forming a large bed or patch of that colour on the back part of the animal : the space round the nose, and sides of the lower lip, are black, but the tip of the lip itself white : the horns are strongly tuberculated at the base ; the ears lined within with short white hair, and the orbits of the eyes surrounded with long black hairs. The whole coat of the animal is excessively thick, and in the spring grows remarkably rough and erect. It has no tail, but a mere broadish cutaneous excrescence.

MEXICAN ROE.

Cervus Mexicanus. C. cornibus apice trifurcatis antrorsum versis, rufus. Lin. Syst. Nat. Gmel. p. 179.

Rufous Deer, with rough trifurcated horns, bending forward.

Chevreul d'Amerique. Buff. 6. p. 210. 243.

Teultal maçame. Hernandez An. Mexic. 324.

Mexican Deer. Pennant Quadr. 1. p. 122.

OUR chief knowledge of this species is derived from the information of Hernandez, who in his history of Mexico informs us that it is a native of that province ; but it is also found in Guiana, Brasil, &c. It is about the size of the common or European Roebuck, and of a reddish colour, but,

when young, is often spotted with white. The horns are thick, strong, and rugged: they bend forwards, and are about ten inches long, and trifurcated on the upper part; but they sometimes vary in the number of branches or processes: the head is large; the eyes large and bright, and the neck thick. The flesh is said to be far inferior to the venison of Europe.

Var.?

INDIAN ROE.

MR. PENNANT describes, from the Museum of the Royal Society (now translated to the British Museum), a pair of horns of some animal of the Roebuck kind, styled by Grew, in his description of the above-mentioned Museum, *Horns of an Indian Roebuck*. They are sixteen inches long, and the same between tip and tip: they are very large, thick, strong, and rugged; and near the base of each is an upright forked branch; the ends bend forwards, and divide into two branches, each furnished with numerous snags or processes.

PORCINE DEER.

Cervus Porcinus. C. cornibus gracilibus trifurcatis, supra fuscus, subtus cinereus. Lin. Syst. Nat. Gmel. p. 179.

Brown Deer, ash-coloured beneath, with slender trifurcated horns.

Porcine Deer. Pennant Quadr. 1. p. 119.

Cerf-Cochon. Buff. Suppl. 3. p. 122. pl. 18.?

THE Porcine Deer of Pennant has slender trifurcated horns, thirteen inches long and six inches distant at the base: the head is ten inches and a half long: the body, from the tip of the nose to the tail, three feet six inches: the height, from the shoulders to the hoof, two feet two inches; and about two inches higher behind: the length of the tail is eight inches: the body is thick and clumsy; the legs fine and slender: the colour, on the upper part of the neck, body, and sides, is brown; the belly and rump lighter.

The specimen described by Mr. Pennant was in the possession of the late Lord Clive, and was brought from Bengal. It is also said to be found in Borneo, and to be called Hog Deer, from the thickness of the body. Of their feet, Mr. Pennant says, are made tobacco-stoppers, in the same manner as of those of the smaller kind of Antelopes and Musks.

Var.?

SPOTTED PORCINE DEER.

THE animal described and figured by Buffon, under the title of *Cerf-Cochon*, or Hog Deer, is

spotted in a similar manner with the Axis: the reader will find it figured in the present publication on the same plate with that animal.

COMMON ROE.

Cervus Capreolus. C. cornibus ramosis teretibus erectis, summitate bifida, corpore fusco-rufo. Lin. Syst. Nat. Gmel. p. 180.
Rufous-brown Deer, with branching upright cylindric horns, bifid at the top.

Caprea. Plin. Hist. Nat. 8. c. 53. Aldr. bisulc. 738. Jonst. Quadr. p. 77. t. 31.

Capreolus. Gesn. Quadr. 324. 1098.

Le Chevreuil. Buff. 6. p. 198. pl. 32, 33.

Roe. Pennant Quadr. 1. p. 120.

THE general history of the Roe has been so excellently detailed by the Count de Buffon, that I shall not scruple to insert without any material alteration, his description of its manners, &c. premising only that its colour is a reddish brown, and that it is the smallest of the European animals of this genus.

“ As the Stag (says this author) is the noblest inhabitant of the wood, he occupies the deepest shades of the forest, and the most elevated ridges of those mountains which are covered with lofty trees. The Roe, as if inferior in species, contents himself with an humbler residence, and generally dwells among the thick foliage of young brushwood. But if he is inferior to the stag in dignity, strength, and stature, he is endowed with more

gracefulness, vivacity, and courage. He is superior in gaiety, neatness, and sprightliness. His figure is more elegant and handsome. His eyes are more brilliant and animated. His limbs are more nimble, his movements quicker, and he bounds, seemingly without effort, with equal vigour and agility. His coat or hair is always clean, smooth, and glossy. He never wallows in the mire, like the stag. He delights in dry and elevated situations where the air is purest. He is likewise more crafty, conceals himself with greater address, is more difficult to trace, and derives superior resources from instinct: for though he has the misfortune to leave behind him a stronger scent than the stag, which redoubles the ardour and appetite of the dogs, he knows how to withdraw himself from their pursuit, by the rapidity with which he begins his flight, and by his numerous doublings. He delays not his arts of defence till his strength fails him; but as soon as he finds that the first efforts of a rapid chace have been unsuccessful, he repeatedly returns on his former steps; and after confounding, by these opposite movements, the direction he has taken, after intermixing the present with the past emanations from his body, he rises from the earth by a great bound, and retiring to a side, he lies down flat on his belly, and in this immovable situation, he allows the whole troop of his deceived enemies to pass very near him.

"The Roe differs from the stag and fallow deer in disposition, temperament, manners, and almost

every natural habit. Instead of associating in herds, they live in separate families. The father, mother, and young go together, and never mix with strangers. They are constant in their amours, and never unfaithful, like the stag; and, as the females generally produce two fawns, the one male and the other female, these young animals, brought up and nourished together, acquire so strong a mutual affection, that they never quit each other, unless one of them meets with a misfortune, which never ought to separate lovers.

“ During the period in which they are engaged in the task of nursing a new family, they drive off the former brood as if to oblige them to yield their place to those which are to succeed, and to form new families for themselves; but when this season is past, the fawns again return to their mother, and remain with her some time; after which they separate entirely, and remove to a distance from the place which gave them birth.

“ The female goes with young five months and a half, and brings forth about the end of April, or beginning of May. The hinds or female stags, on the contrary, go with young above eight months; and this difference is alone sufficient to prove that these animals are so remote from each other in species, as to prevent their ever intermixing or producing an intermediate race. By this difference, as well as that of figure and size, they approach the goat as much as they recede from the stag; for the goat goes with young nearly the same time, and the Roe may be regarded as a wild

goat, which, feeding solely on wood, carries wood* instead of horns. The female, when about to bring forth, retires to the deepest recesses of the forest. In ten or twelve days the fawns acquire strength sufficient to enable them to follow her. When threatened with danger, she hides them in a close thicket, and to preserve them presents herself to be chased. But, notwithstanding all her care and anxiety, the young are sometimes carried off by men, dogs, or wolves. This is, indeed, the time of their greatest destruction. Of this species, which is not very numerous, I know, from experience, that more are destroyed in the month of May than during all the rest of the year. I often live in a part of France where the Roe is greatly esteemed (*Montbard in Burgundy*). Many fawns are annually brought me alive by men, and others killed by dogs, without reckoning those which are devoured by wolves: and I have observed, during the space of more than twenty-five years, that, as if there was a perfect equilibrium between the causes of destruction and renovation, their number is always nearly equal in the same districts. It is not difficult to count them; for they are no where numerous, and they

* The Count de Buffon entertained a singular theory, that the horns of the Deer tribe were a kind of reproduction, as it were, of the trees, &c. on which the animals browsed; the nutritious organic moleculæ arranging themselves, in some degree, according to their former figure!!! Under the article *Stag*, in that agreeable writer's natural history, the reader may find this extraordinary notion maintained at some length.

live separately in distinct families. In a coppice, for example, of an hundred acres, there will be one family, or from three to five individuals; for a female which generally produces two fawns, sometimes brings forth but one, and sometimes, though very rarely, three. In another district, of double the extent, there will be seven or eight; that is, two families; and I have remarked, that each district always harbours an equal number, except when the winters have been extremely rigorous and long; in which case the whole family is destroyed; but it is replaced by another the following year; and those districts, for which they have a predilection, are always inhabited nearly by an equal number. It is alledged, however, that in general their number is diminishing. There are whole provinces, it must be acknowledged, in France, where not one of them is to be found. Though common * in Scotland, there are none in England. They are very rare in Italy; and they are now scarcer in Sweden than formerly. But this may have proceeded from the diminution of forests, or from some very severe winter, like that of the year 1709, which almost destroyed all the Roes in Burgundy; so that several years elapsed before the species was recruited. Besides, they are not equally fond of every country; for, in the same countries, they prefer particular places. They love hills, or plains on the tops of mountains.

* Not very common; being found only in the northern parts or Highlands.

They never stay in the deepest recesses of the forests, nor in the middle of extensive woods; but give the preference to the skirts or projections of woods, which are surrounded with cultivated fields, and to open coppices which produce the berry-bearing alder, brambles, &c.

"The fawns continue with their parents eight or nine months, and, when separated, about the end of the first year of their age, the first horns begin to appear, in the form of two knobs, much less than those of the stag. There is still a greater difference between these two animals. The horns of the stag are cast in the spring, and are renewed in summer; but those of the Roe fall off at the end of autumn, and are replaced in winter. When the Roebuck has renewed his horns, he rubs them against the trees, like the stag, in order to free them from the skin with which they are covered; and this commonly happens in the month of March, before the trees begin to shoot. Hence it is not the sap of the wood which colours the horns of the Roe. The horns, however, are brown when the animal is brown, and yellow when he is red. The second horns of the Roe have two or three antlers in each side: the third three or four; the fourth four or five, and they seldom have more. We distinguish the old ones by the thickness of their stems, the largeness of the bur, of the pearlings, &c. As long as the horns continue soft they are extremely sensible. Of this I have had a striking example. The young shoot of a Roebuck's horn was carried off by a ball. The

animal was stunned, and fell down as if he had been dead. The shooter, who was near, seized him by the foot; but the Roebuck suddenly recovering his senses and strength, dragged the man, though he was strong and alert, thirty paces into the wood. After killing him with a knife, we discovered that he had received no other wound. Besides, it is well known that flies are very troublesome to the stag: when his horns are growing, he retires to the deepest parts of the wood, where the flies are less numerous: because, when they fix upon the tender horns, the irritation they cause is insupportable. Thus there is an intimate communication between the soft parts of the horns, and the whole nervous system of the animal. The Roebuck, having nothing to apprehend from the flies, because he renews his horns in winter, never retires in this manner; but he walks with caution, and carries his head low, lest he should touch the branches.

“ As the female Roe goes with young only five months and a half, and as the growth of the fawn is more rapid than that of the stag, the duration of her life is much shorter; seldom extending, I imagine, beyond twelve or fifteen years. I have reared several of them; but could never preserve them above five or six years. They are very delicate in the choice of their food, require a great deal of exercise, fine air, and much room, which is the reason why they are unable, except in the first year of their growth, to resist the inconveniences of a domestic life. To make a pair of these

animals live comfortably, they must have a park of an hundred acres. They may be tamed, but can never be rendered obedient or familiar. They always retain a portion of their natural wildness, are easily terrified, and then run with such force against the walls that they often break their limbs. However tame they may be, they cannot be trusted ; for the males particularly are subject to dangerous caprices ; they take an aversion to certain persons, and make furious attacks with their horns, the blows of which are sufficient to throw a man to the ground, after which they continue to tread on him with their feet. The Roebuck bellows not so frequently, nor with so loud or strong a voice, as the stag. The young ones utter a short or plaintive cry, *mi, mi*, by which they indicate their want of food. This sound is easily imitated, and the mother, deceived by the call, will come up to the very muzzle of the hunter's gun.

" In winter the Roes frequent the thickest coppices, and feed upon brambles, broom, heath, the catkins of the hazel, willow, &c. In spring they repair to the more open brushwood, and eat the buds and young leaves of almost every tree. This warm food ferments in their stomachs, and intoxicates them to such a degree, that they are easily surprised. They know not where they are going, and not unfrequently come out of the wood, and sometimes approach flocks of cattle, and the habitations of men. In summer they dwell in the more elevated coppices, from which they seldom depart, excepting in very dry weather,

when they go to drink at some fountain; for when the dews abound, or the leaves are moistened with rain, they never drink. They are delicate in the choice of their food; they eat not with avidity, like the stag, and they seldom approach the cultivated fields, because they prefer the berry-bearing alder and bramble to grain or pot herbs of any kind.

" Though the flesh of these animals be excellent food, yet it admits of much choice. The quality of the venison depends chiefly on the country they inhabit; and even the best countries produce good and bad kinds. The flesh of the brown Roe is finer than that of the red. All the males, after the age of two years, have hard and ill-tasted flesh; but that of the females, though farther advanced in age, is more tender. That of the fawns, when very young, is loose and soft; but at the age of eighteen months, it is in the highest state of perfection. Those which live in plains and vallies are not good; those which come from moist countries are still worse: those brought up in parks are insipid; and, lastly, there are no good Roes but those of dry elevated countries, interspersed with hills, woods, cultivated and fallow lands, where they enjoy plenty of air, food, freedom, and solitude; for those which have been often disturbed are meagre, and the flesh of those that have been often hunted is dry and insipid."

The Roe, like other quadrupeds, is sometimes found perfectly white, an instance of which is recorded in the Count de Buffon's Natural History.

We are also informed by Count Mellin, in a letter to the Count de Buffon, that a race of coal black Roes exists in a very small German district, called the Forest of Lucia, in the dominions of the King of England as Duke of Lunenberg. This variety is said to be constant or permanent, and in size and all other particulars, except colour, to resemble the common kind.

Mr. Pennant informs us that the Roebuck was formerly very common in Wales, in the north of England, and in Scotland, but that it no longer exists in any part of Britain, except in the Scottish highlands. They first occur in the woods on the south side of *Loch Rannoch*, in Perthshire, and the last that are found are in the woods of *Langwath*, on the southern borders of *Cathness*; but they are most numerous in the beautiful forests of *Invercauld*, in the midst of the *Grampian* hills. They are unknown in *Ireland*.

The common or general measure of the Roe is three feet nine inches from nose to tail; the height before, two feet three inches; but behind two feet seven inches, and the tail is about one inch long: the horns are about six or eight inches long, and are strong, upright, rugged, and trifurcated: the general colour of the animal is reddish brown, more or less deep in different individuals, and the rump is white. It is an inhabitant of most parts of Europe, as far as Norway; it also occurs in some parts of Asia, but is not to be found in Africa. Whether it be a native of America seems somewhat doubtful, though

some species nearly allied to it are found in that continent.

RIB-FACED DEER.

Cervus Muntjac. *C. cornibus teretibus pilosis retroversis trifurcatis, apice superiore uncinato.* Lin. *Syst. Nat. Gmel.* p. 180.

Deer with trifurcated horns rising from a cylindric hairy base, and with the upper fork hooked.

Le Chevreuil des Indes. *Buff. Suppl.* 6. p. 195. pl. 26.

Rib-faced Deer. *Pennant Quadr.* 1. p. 119.

THIS species is a native of Java and Ceylon, and is somewhat smaller than the common Roe-buck, and of a thick form, like the Porcine Deer. The horns are trifurcated, and the upper fork is hooked: they are placed on a bony process, like a pedestal, elevated three inches from the skull, and covered with hair; but what seems principally to distinguish this animal is the appearance of three longitudinal subcutaneous ribs extending from the horns to the eyes. From each side of the upper jaw hangs a tusk, so that this species differs, in that respect, from most of the genus. It was first described by Mr. Pennant, who informs us that it is called in the Malaye tongue by the name of *Kidang*, and by the Javans, *Munt-Jak*.

Mr. Pennant also adds, that the pedestals or pillars on which the horns stand, grow thicker as the animal advances in age, and the margin swells out all round; so that if the horns are forced off

the pedestals, the surface of the last has the appearance of a rose*.

GREY DEER.

Cervus Guineensis. C. griseus, subtus nigricans. Lin. Syst.

Nat. p. 94. Mus. Ad. Fr. 1. p. 12.

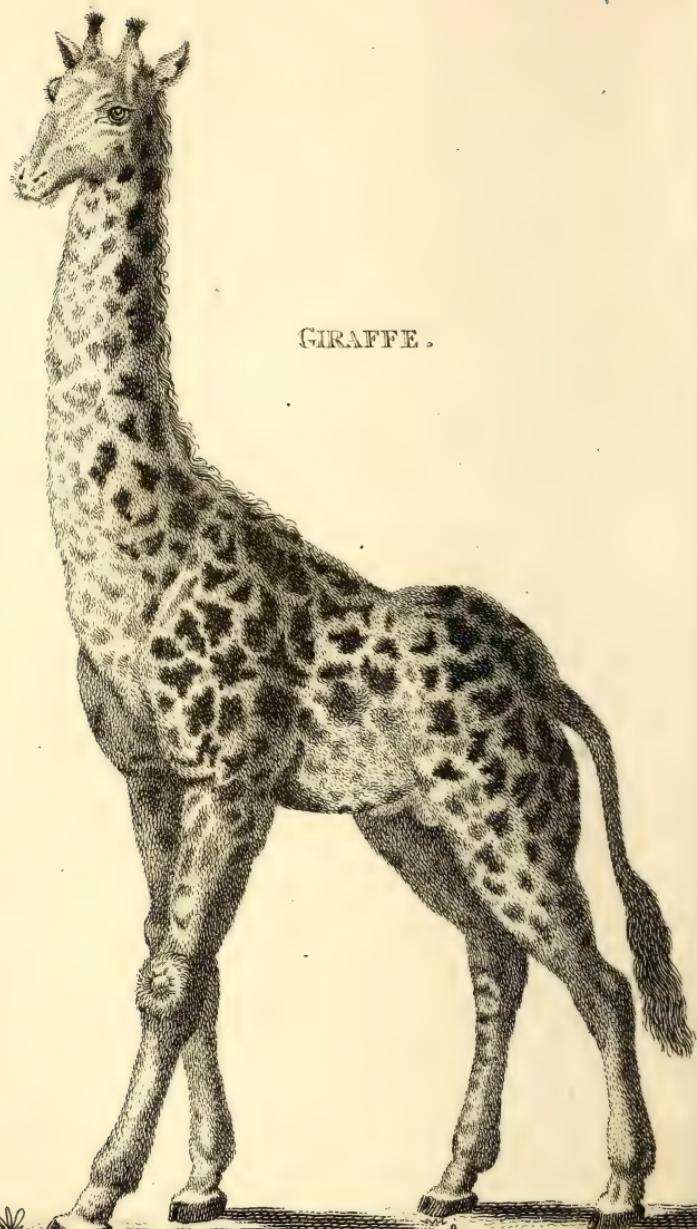
Grey Deer, blackish beneath.

Grey Deer. *Pennant Quadr. 1. p. 181.*

THIS obscure species is described by Linnæus, in his work entitled *Musæum Adolphi Friderici*; but, as the horns were wanting in the specimen described, it remains doubtful whether the animal should most properly be considered as a *Deer*, *Musk*, or female *Antelope*.

Its size is that of a Cat: the colour grey, with a line of black between the ears, a large spot of black above the eyes, and on each side of the throat a line of black, pointing downwards: the middle of the breast black; the fore legs and sides of the belly, as far as the hams, marked with black; the ears rather long; the under side of the tail black. It is said to be a native of Guinea.

* In Mr. Allamand's description of this species, in the sixth supplemental volume of Buffon, we are informed that its colour is a greyish brown, paler beneath; that the breast and insides of the thighs are whitish, and that the tongue is extremely long, so that the animal can extend it even beyond the eyes.



GIRAFFE.

Heath, Jeffer

CAMELOPARDALIS. CAMELOPARDI.

Generic Character.

<i>Cornua pelle setosa tecta, apice fasciculo pilorum terminata.</i>	<i>Horns permanent, bony, covered with a bristly skin.</i>
<i>Dentes Primores inferiores octo, spatulati, extimo externe profunde bilobo.</i>	<i>Front-teeth in the lower jaw eight; the exterior one on each side deeply bilobate.</i>

GIRAFFE.

Camelopardalis Giraffa. *C. albida, maculis subquadratis fusco-ferrugineis, cornibus sestosis apice truncatis.*

Whitish Camelopardi, with squarish ferruginous-brown spots, and bristly horns, truncated at the tip.

Cervus Camelopardalis. *Lin. Syst. Nat. p. 92.*

Camelopardalis Giraffa. *Lin. Syst. Nat. Gmel. p. 181.*

Camelopardalis. *Gesn. Quadr. p. 160. Aldr. bisulc. p. 927.*

Camelus Indicus. *Jonst. Quadr. t. 40.*

Gyraffa. *Bellon. obs. p. 118. f. p. 119.*

Giraffa. *Nieremb. Klein. Briss. &c.*

Giraffe. *Buff. 13. p. 1. and Suppl. 3. p. 320. pl. 64. and Suppl.*

7. p. 345. pl. 81.

Camelopard Giraffe. *Pennant Quadr. 1. p. 65. pl. 11.*

IF height alone constituted precedence among quadrupeds, the Giraffe, as Mons. Vaillant, one of its latest and most accurate describers, has well observed, would undoubtedly claim the first rank;

measuring, when full grown, near seventeen feet from the top of the head to the fore feet. The female, however, is lower than the male, and the measure above-mentioned must be understood to relate to the animal when arrived at the utmost limits of its tallest growth; the generality of those described by travellers not exceeding fifteen or sixteen feet. Notwithstanding the unusual proportions of this animal, its general form is in the highest degree elegant and picturesque; the head being small, the aspect mild, the neck extremely long and tapering; the fore-parts much higher than the hinder, and the disposition of the colours singular and pleasing. At first view, the fore-legs seem nearly twice the length of the hind; but this difference, on accurate examination, appears to result chiefly from the extraordinary height of the shoulders, compared with that of the thighs: accordingly, among the old writers who have described this animal, Petrus Gyllius* perhaps approaches nearest to the truth, when he affirms, that all the legs, or tibiæ, of the Camelopardi are of nearly equal length, but that the fore-thighs (femora anteriors) are so long in comparison with the hind, that the back appears inclined like the roof a house.

The horns of the Camelopardi differ in texture from those of all other horned quadrupeds; forming, as it were, a part of the skull, and consisting of a porous bony substance covered externally with

* Hist. Animal. chap. 9.

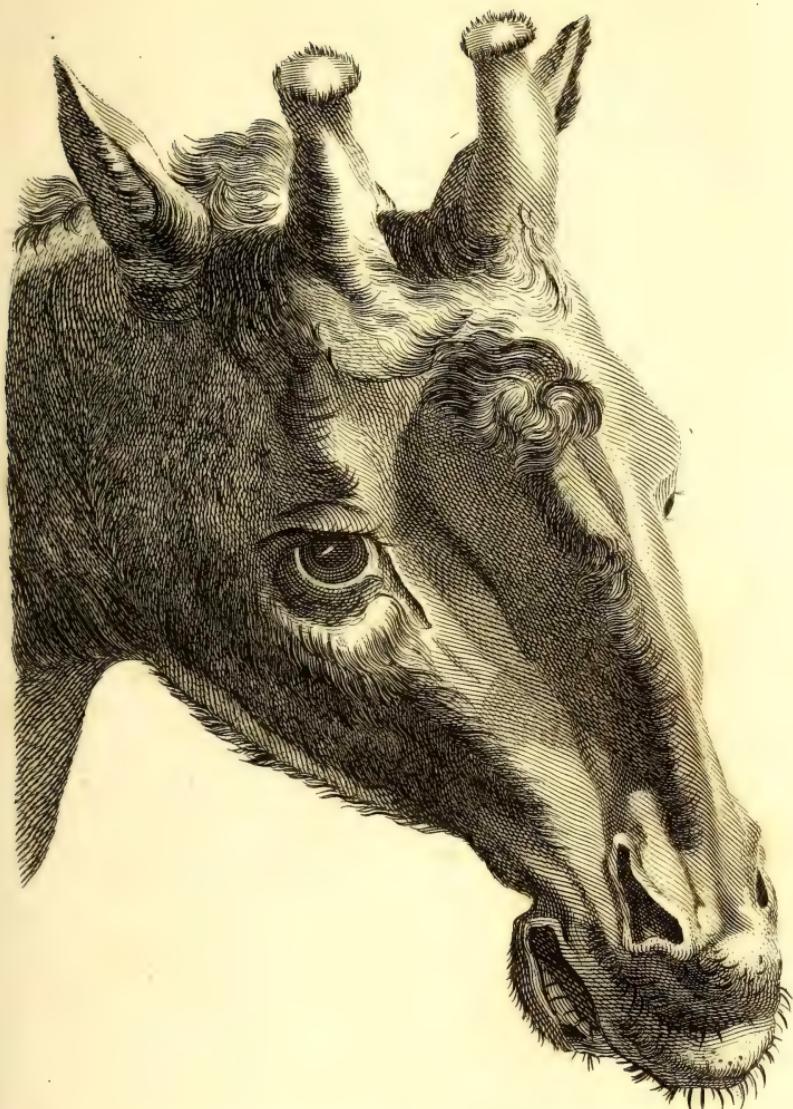
short coarse bristly hair : they terminate abruptly, in a flattish or slightly convex head, but little wider than the other part of the horn, and edged with stiff bristles all round the outline. On the middle of the forehead rises a considerable protuberance, owing to an elevation or bony rising on that part of the skull. From the head to the middle of the back runs a short stiffish mane. The tail is of moderate length, and is of a cylindrical form, gradually tapering towards the end, and terminating in a tuft of long hair. The hoofs are moderately large, and black. The fore part of the body is very thick and muscular, and the hind part thin and meagre. The ground-colour of the animal is whitish, variegated on all parts with numerous, moderately large, and somewhat squarish spots, which in the male are brown, and in the female ferruginous. In the younger animals they are sometimes of a bright reddish-yellow. These marks or spots are of a somewhat less regular shape on the sides than on the neck and shoulders.

The Camelopardi is a native of Ethiopia, and some other parts of Africa*, where it is chiefly found in forests, living on herbage of various kinds, but principally on the foliage of trees, and particularly on some species of Mimosa. When grazing on the surface of the ground, it is observed to spread its fore-legs very considerably, in order to enable it to reach the ground with

* It is also said to occur in some parts of Asia.

greater facility. It is an animal of a mild and harmless disposition, and when attacked, endeavours merely to save itself by flight; running, according to Mons. Vaillant, with great swiftness, though in a somewhat peculiar and awkward style, on account of the length of its neck and breadth of its fore-parts compared with the hind. Mons. Vaillant, informs us that he chased one on full speed on horseback, but the animal, on turning a small hill, was soon out of sight: the dogs, however, came up with him, and he was obliged to stop and defend himself, which he endeavoured to do by kicking in a forcible manner; and M. Vaillant was so fortunate as to kill the animal at a single shot.

The male and female *Camelopardi* resemble each other when young; but as the animal advances in age, the spots on the male become dark-brown, while those of the female continue of a ferruginous cast. In both, however, some occasional differences of shade take place, and the female, when very old, is said to acquire the dusky shades of the male. The female has also a less conspicuous tubercle on the forehead, and has four teats, as in a cow. According to Mons. Vaillant, the number of teeth in the *Camelopardi* is as follows, viz. six grinders on each side, both above and below: no front teeth in the upper jaw, but eight in the lower. He adds, that the head is beautiful; the mouth small; the eyes large and animated. The flesh is said to be excellent food, and the marrow white and firm.



HEAD OF GIRAFFE.

H. C. Wood.

The general pace of the Camelopardi, on being pursued, is a very brisk trot*; so rapid, that a horse cannot without difficulty overtake it.

These animals are sometimes seen in small groupes, to the number of six or seven together, and when disturbed run off with great celerity. When seen in front, at some little distance, the animal might be mistaken for a decayed tree, and thus be easily passed by without particular notice.

The Camelopardi was known to the ancient Romans, and was first exhibited, according to Pliny, in the Circæan games by Cæsar the Dictator. It was afterwards more frequently introduced, and we are told, that in the time of the Emperor Gordian no less than ten were exhibited at once. Aurelian also exhibited it among other remarkable animals in his triumph on the conquest of Palmyra. It is represented, among other rare animals, on the Prænestine pavement, made by the direction of Sylla, and is expressed both in its grazing and brousing attitudes. In later times it appears to have been brought into Europe about the year 1559, when the Sultan of Babylon is said to have sent one as a present to Fridericus Oenobarbus, Emperor of Germany. Another was sent by the King or Dey of Tunis to Laurentius de Medicis, in whose possession it was seen by Politian. These latter anecdotes are on the authority of Gesner and Aldrovandus.

* Some writers insist that it is a gallop rather than a trot.

ANTILOPE. ANTELOPE.

Generic Character.

<i>Cornua concava, sursum versa, teretia, annulata vel spiralia, persistentia.</i>	<i>Horns hollow, seated on a bony core, growing upwards, annulated or wreathed, permanent.</i>
<i>Dentes Primores inferiores octo.</i>	<i>Front-teeth in the lower jaw eight.</i>
<i>Laniarii nulli.</i>	<i>Canine-teeth none.</i>

THE Antelopes constitute a very numerous race, of which the species have but lately been clearly ascertained: few, except the common African Antelope appear to have been very distinctly known to the more ancient naturalists; and even in the twelfth edition of the *Systema Naturæ* of Linnæus not more than six are mentioned: these Linnæus included under the genus *Capra* or Goat; but later observations have conspired to prove, that in reality the Antelopes ought to constitute a distinct genus; having characters sufficiently appropriate. Their general habits or manners are extremely well described by Mr. Pennant, who

has prefixed them to his particular description of the species.

" They inhabit (says this author), two or three species excepted, the hottest part of the globe; or, at least, those parts of the temperate zone that lie so near the tropics as to form a doubtful climate. None, therefore, except the *Saiga* and the *Chamois*, are to be met with in Europe; and notwithstanding the warmth of South America is suited to their nature, not a single species has yet been discovered in any part of the new world. Their proper climates seem, therefore, to be those of Asia and Africa, where the species are very numerous.

" As there appears a general agreement in the nature of the species that form this great genus, it will prevent needless repetition to observe, that the Antelopes are animals generally of a most elegant and active make; of a restless and timid disposition; extremely watchful; of great vivacity; remarkably swift and agile, and most of their boundings so light, so elastic, as to strike the spectator with astonishment. What is very singular is that they will stop in the midst of their course, gaze for a moment at their pursuers, and then resume their flight.

" As the chace of these animals is a favourite amusement with the eastern nations, from that may be collected proofs of the rapid speed of the Antelope tribe. The greyhound, the fleetest of dogs, is usually unequal in the course, and the sportsman is obliged to call in the aid of the

Falcon, trained for the purpose, to seize on the animal, and impede its motions, in order to give the dogs an opportunity of overtaking it. In India and Persia a species of Leopard is made use of in the chace: this is an animal that takes its prey not by swiftness of foot, but by the greatness of its springs, by motions similar to those of the Antelope; but, should the Leopard fail in its first essay, the game escapes.

“ The fleetness of the Antelope was proverbial in the country it inhabited, even in the earliest times: the speed of *Asahel* (2 Sam. ii. 18.) is beautifully compared to that of the *Tzebi*, and the *Gadites* were said to be as swift as the *Antelopes** upon the mountains. The sacred writers took their similes from such objects as were before the eyes of the people to whom they addressed themselves. There is another instance drawn from the same subject: the disciple raised to life at *Joppa* was supposed to have been called *Tabitha*, i. e. *Dorcas*, or the *Antelope*, from the beauty of her eyes; and to this day one of the highest compliments that can be paid to female beauty in the eastern regions is *Aine el Czazel*, ‘ You have the eyes of an Antelope.’ ”

“ Some species of Antelopes form herds of two or three thousands, while others keep in troops of five or six. They generally reside in hilly countries, though some inhabit plains: they often brouse like the goat, and feed on the tender

* Improperly translated *Roes*.

shoots of trees, which gives their flesh an excellent flavour. This is to be understood of those which are taken in the chace; for those which are fattened in houses are far less delicious. The flesh of some species is said to taste of musk, which perhaps depends on the qualities of the plants they feed upon.

“ This preface (says Mr. Pennant) was thought necessary, to point out the difference in nature between this and the Goat kind, with which most systematic writers have classed the Antelopes: but the Antelope forms an intermediate genus, a link between the Goat and the Deer; agreeing with the former in the texture of the horns, which have a core in them, and are never cast; and with the latter in elegance of form and swiftness.”

To the above introduction it may be added, that in detailing the particular history of the Antelopes, very little more can be done than copying the descriptions already given by Dr. Pallas, Mr. Pennant, Mr. Allamand, &c. I must, however, acknowledge myself not entirely convinced that every animal described in the following enumeration is in reality a distinct species.

Antelopes with strait or nearly strait Horns.

EGYPTIAN ANTELOPE.

Antelope Oryx. *A. cornibus rectissimis subulatis argute rugosis, corpore griseo, striga dorsali nigricante, pilo postico contrario.* Lin. Syst. Nat. Gmel. p. 189.

Grey Antelope, with black and white face, dusky dorsal stripe, and very long, strait, tapering, sharply-annulated horns.

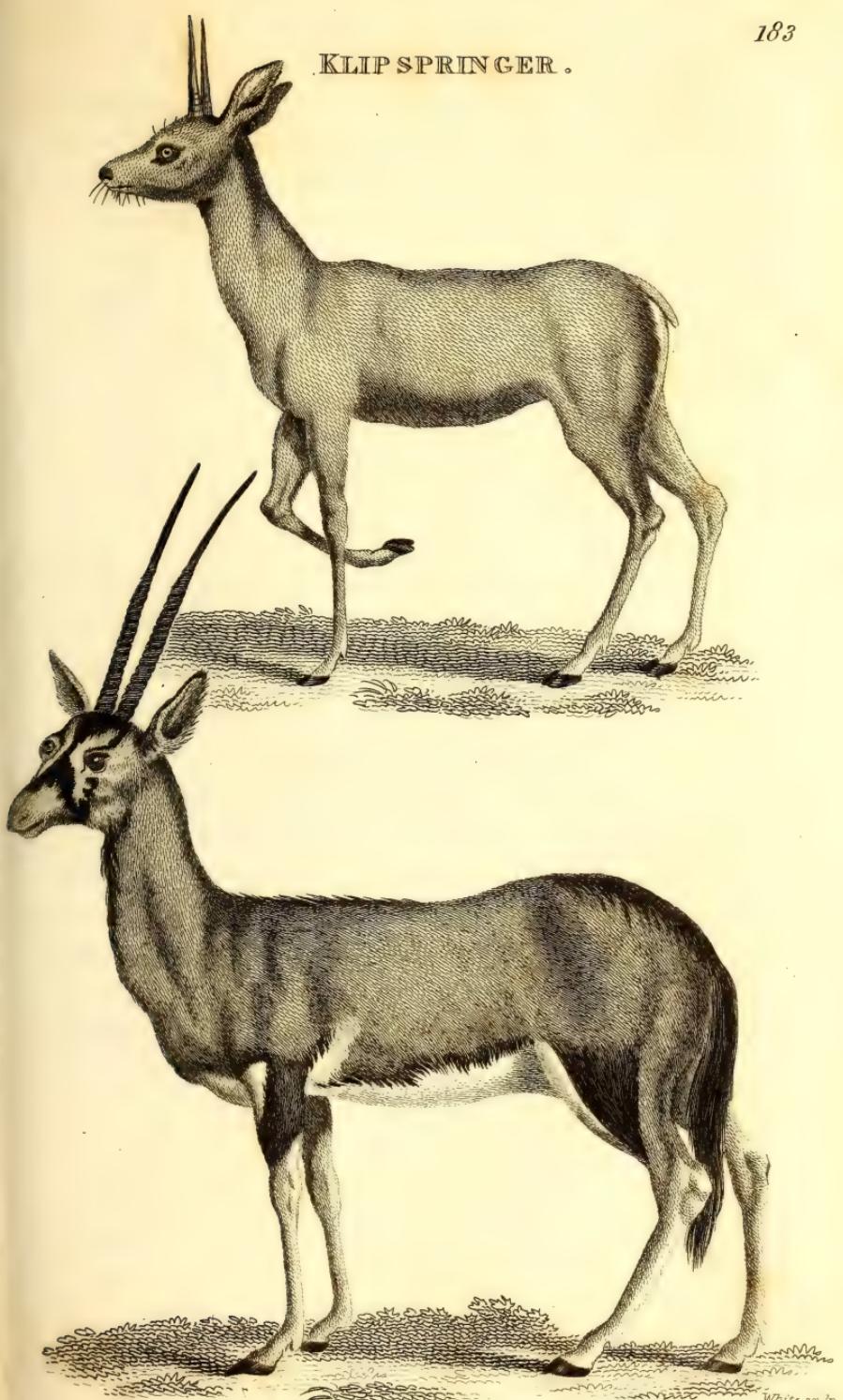
Capra Gazella. *C. cornibus teretibus rectissimis longissimis, basi annulatis.* Lin. Syst. Nat. p. 96.

Le Pasan. Buff. 12. p. 212. pl. 33. f. 3. and Suppl. 6. p. 155. pl. 17.

Ægyptian Antelope. Pennant Quadr. 1. p. 75.

THE Egyptian Antelope, or Pasan, is more easily distinguished than many others in this extensive race; the horns affording a character perfectly clear and constant: they are almost entirely strait, nearly three feet in length, very slender in proportion to their length, annulated at the lower part or towards the base, the remainder smooth, and gradually tapering to the point. The size of the animal is somewhat superior to that of a deer. Its natural history has been of late years greatly elucidated by the observations of Dr. Forster and Mr. Klockner, whose accounts have been copied by the Count de Buffon in his sixth supplemental volume, as well as by Mr. Pennant in his History of Quadrupeds. From these accounts it appears that the Pasan is nearly four feet high, measured from the top of the shoulders to the ground; that it is found about the Cape of Good

KLIP SPRINGER.



EGYPTIAN ANTELOPE.

Hope, as well as in other parts of Africa ; that in the female the horns are smaller than in the male, and that the animals do not associate in troops or herds, but only in pairs. The head is white, marked in a singular manner with black, which latter colour forms a kind of triangular patch on the top of the forehead, the point running down between the eyes, and then dilating into a similarly formed patch in an opposite direction, situated on the upper part of the nose, and these two patches are united on each side by a streak or band of black running from the root of each horn, through the eyes, down the cheeks : the end of the nose is milk white. It is observable, says Mr. Klockner, that there are but very few instances in quadrupeds of a black or other coloured band running across the eyes and cheeks ; the Badger and the Coati-Mondi furnishing almost the only examples *. The neck and upper part of the body are of a pale blueish grey, with a slight tinge of blossom-colour ; the belly and insides of the limbs are white, but along the lower part of the sides runs a dark or blackish chesnut-coloured stripe, separating the colours of the upper and lower parts : a dark stripe runs along the back to the tail, and a large patch of similar colour is seated on the upper part of the outsides both of the fore and hind legs, and is continued down the front of each leg in form of a stripe, which again

* The *Antilope Leucoryx*, or White Antelope, the *Myoxus Dryas*, or Wood Dormouse, and some others, might be added to the list.

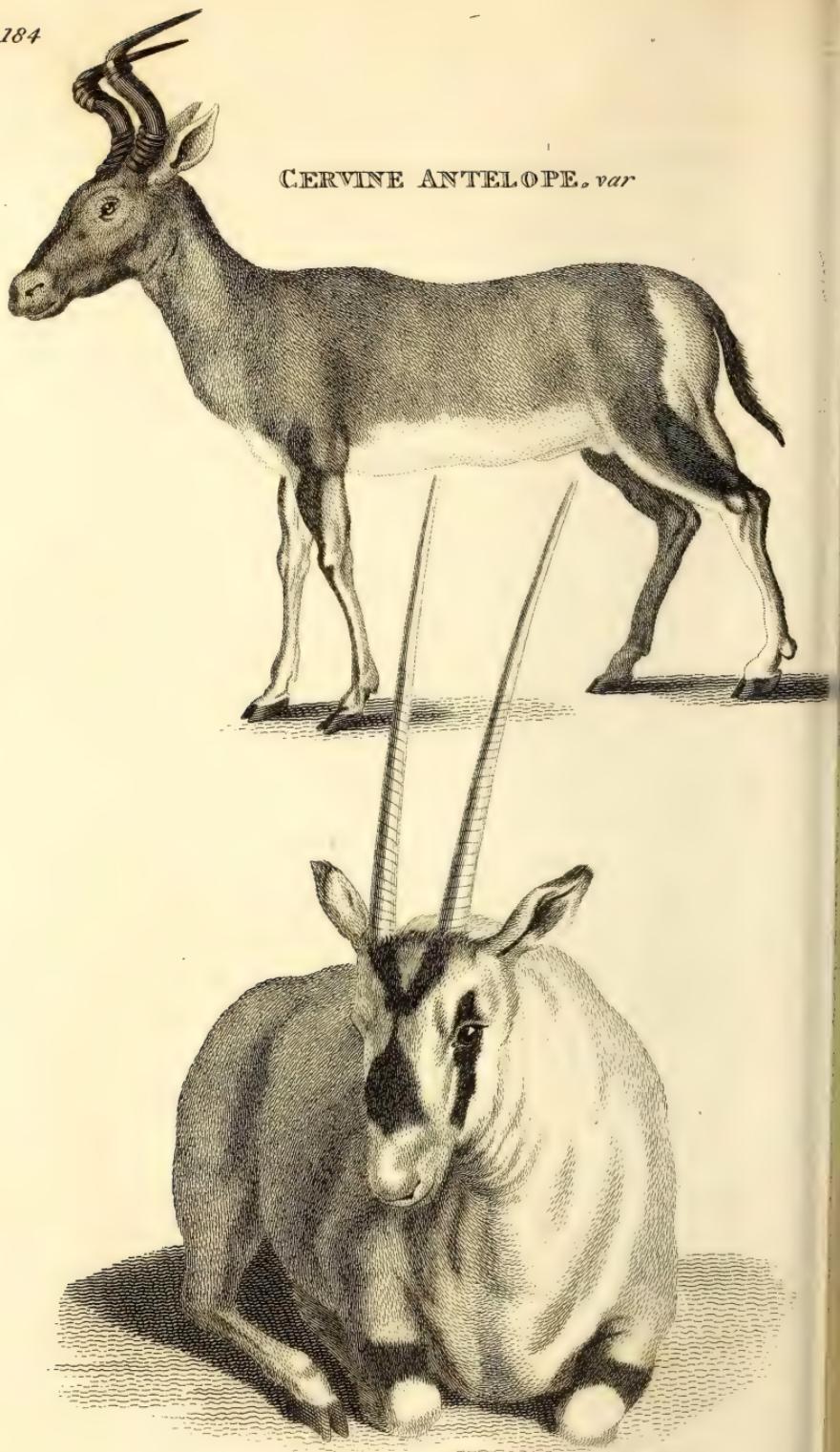
dilates into a patch or spot at some distance above the feet: the tail is brown, covered with slightly flowing black hairs resembling in some degree those of a horse's tail: the length of the tail from base to tip is about two feet and a half: the hoofs* and horns are black: the hair under the throat, along the ridge of the back, and over the shoulders, is longer and rougher than in other parts.

This species is said to be found in Egypt, Arabia, about the Cape of Good Hope, &c. It is also supposed to occur in India. It is considered by the Africans as a very dangerous animal, the form and sharpness of the horns rendering it a very formidable adversary; and, like others of this genus, when it makes its attack, it bends down the head, and rushes forward with great violence, thus presenting the points of its sharp and long horns immediately forwards. The Hottentots, when they have wounded it, are said to be careful of approaching it till they are well assured that it is totally deprived of life.

The length of a skin of this animal, measured by Mr. Pennant, was above six feet six inches; by which we must understand from the tip of the nose to the end of the tail.

* The shape of the feet differs in some degree from that of other Antelopes; each segment or division of the hoofs being of the figure of a very long isosceles triangle; whereas in most other cloven-footed quadrupeds it is nearly of the form of an equilateral triangle. This configuration of the feet, it is pretended, gives the animal a greater degree of strength or security of foot than most others.

CERVINE ANTELOPE, var.



WHITE ANTELOPE.

Though this species has but lately been well described, yet its horns, like those of several others, have been long since known to naturalists, and seem to have been pretty well figured in Aldrovandus.

WHITE ANTELOPE.

Antilope Leucoryx. *A. cornibus subulatis rectis convexè annulatis, corpore lacteo.* Lin. Syst. Nat. Gmel. p. 190.

Milk-white Antelope, with very long, nearly strait, tapering slightly annulated horns.

Leucoryx Antelope. Pennant Quadr. 1. p. 76.

IT has already been observed in the introduction to this genus, that some few species are of a far less elegant and light form than the rest: of this the Leucoryx or White Antelope seems the most remarkable instance; the body being thick and heavy, and the head very large. In the disposition of colours on the face there is a remarkable approach to those of the Pasan or Egyptian Antelope, before described; and had the figure alone of this animal been given, without its description, one would be almost tempted to suppose it a bad representation of the former species. The Leucoryx, however, is entirely milk white, except the markings on the face and limbs, as shewn in the engraving: these are described as of a red colour, and not black, as in the Pasan: the nose is thick and broad, like that of a cow: the ears somewhat slouching; the body heavy; the limbs

somewhat less so: the horns very long, very slightly incurvated, slender, and annulated about half way upwards; their colour is black, and they are sharp-pointed: the hoofs are black, and the tail somewhat flocky, or terminated by loose hairs. The size of this species is compared by Mr. Pennant to that of a Welch runt. It is an inhabitant of an island called *Gow Bahrein* in the gulf of *Bassora*. Mr. Pennant's figure, which is here represented, was from a drawing preserved in the British Museum, said to be taken from the life in the year 1722, by order of Sir John Lock, at that time agent to the East-India company at *Ispahan*. They were preserved as rarities by *Shah Sultahn Houssein*, Emperor of Persia, in his park at *Cassar*, about eight leagues from the capital.

ALGAZEL.

Antilope Gazella. *A. cornibus subulatis subarcuatis rugosis.*

Lin. Syst. Nat. Gmel. p. 190.

Bay Antelope, with slightly bowed, tapering, wrinkled horns.

Capra bezoartica. *C. cornibus teretibus arcuatis totis annulatis, gula barbata.* *Lin. Syst. Nat. p. 96.*

Hircus Bezoardicus. *Aldr. bisulc. p. 756.*

Algazel. *Buff. 12. p. 211. t. 33. f. 1, 2.*

Algazel Antelope. *Pennant Quadr. 1. p. 77.*

THIS species is a native of India and Persia, and is also found in many parts of Africa. It is about the size of a Fallow Deer, and is of a reddish or bright bay colour, with a white breast:

the horns are very long, thin, and black, nearly upright, bending inwards at their extremities; they are nearly smooth; the rings with which they are marked being very slight, except near the base, where they are somewhat more distinct: they are almost three feet in length.

In celerity and general manners this species agrees with many others of its tribe, and is said to be easily tamed.

As this Antelope is also supposed to afford a *bezoar* of the best and finest kind, it may not be improper here to give some general account of the celebrated concretes thus named, and which were once of such high reputation in the *materia medica*, on account of various virtues which the superstition of former ages seems to have bestowed upon them.

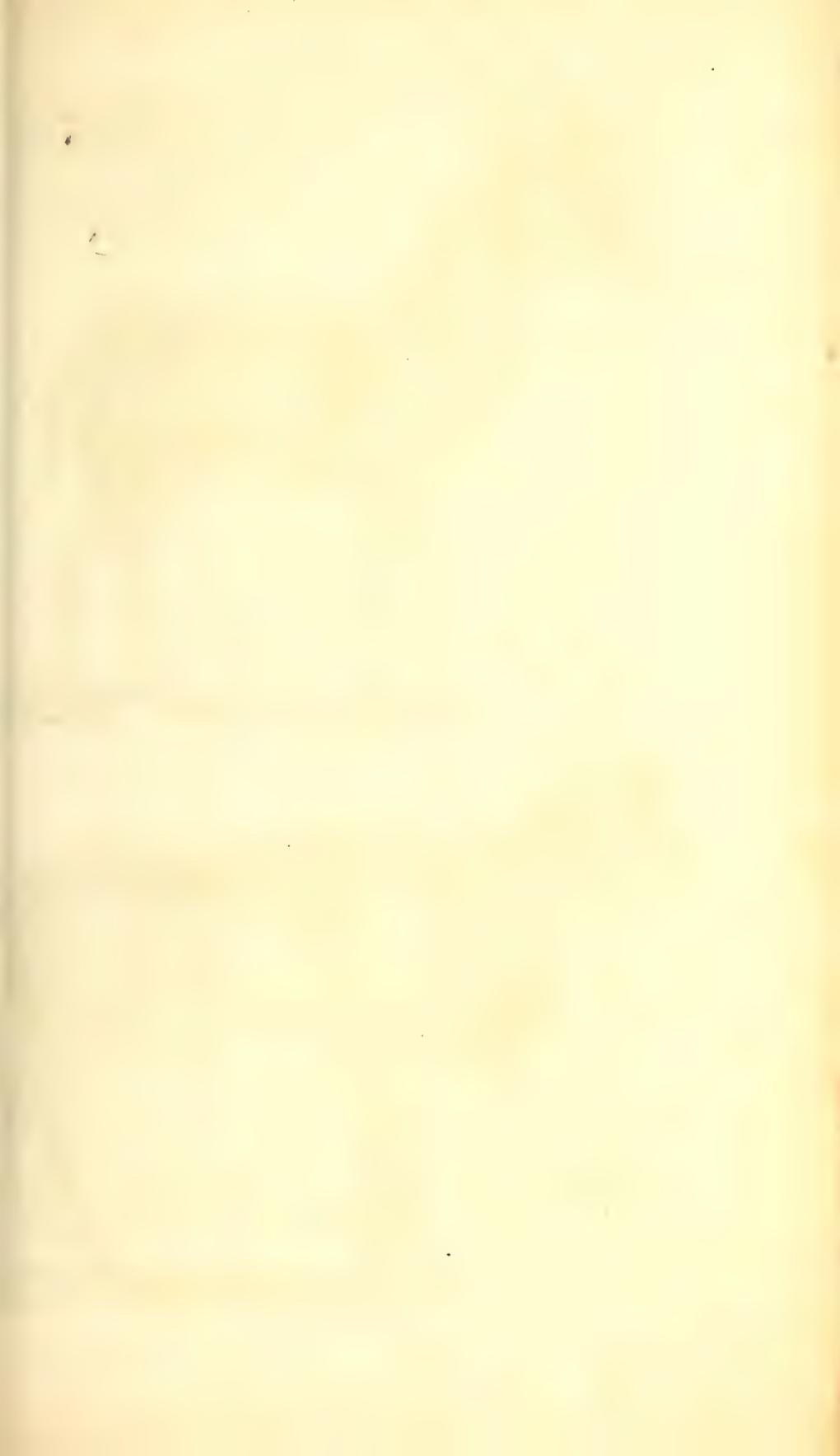
Bezoars are smooth, oval, or roundish, and generally slightly flattened, solid concretions, which are formed in the stomachs of several quadrupeds; chiefly of the order *Pecora* or Ruminants. Those found in the eastern regions have always been considered as far superior to any others. The genuine oriental bezoar of the shops is commonly about the size of a kidney-bean, but often far larger; of an extremely smooth surface, and of a dark olive-colour. When broken, it is found to be composed of a number of concentric coats or lamellæ, each almost equally smooth with the exterior: in the middle is either a cavity, or else some powdery or fibrous matter, or some small piece of a vegetable stalk, leaf, &c. which seems

to have operated as a nucleus, on which the bezoar inclosing it has been gradually formed. The bezoar has, in general, no particular taste or smell*, and when reduced to powder, retains its usual colour.

It was formerly considered as a most powerful alexiphamic, insomuch that other substances supposed to be possessed of alexiphamic virtues have been often denominated *Bezoardics*. It is allowed, however, by modern physicians, that its virtues were imaginary, and its effects entirely insignificant, and it has been accordingly discarded from rational practice. It seems to have been first introduced into physic by the Arabians.

It is in Aldrovandus that we must look for a full enumeration of all the virtues of Bezoar. He informs us that it is a sovereign remedy against the bites of poisonous animals; that it cures melancholy, pestilential fevers, faintings, vertigo, epilepsy, and worms; that it dissolves the stone, &c. &c. He relates a case from Monardes, in which a certain licentiate, who had swallowed something poisonous, and was in consequence afflicted with most grievous symptoms, and appeared to be in danger of speedy death, was so wonderfully relieved by taking only three grains of *Oriental Bezoar*, that he was freed from all his dangerous symptoms in less time than the *Apostles Creed* could be thrice repeated! passed a very to-

* In the eastern regions, however, it is said to be sometimes found of a highly aromatic taste and smell.



STRIPED ANTELOPE.



INDIAN

ANTELOPE.



lerable night, and the next morning was restored to his usual health!!!

The *Occidental* Bezoar is said to be found in certain species of deer, &c. in America. It is much larger than the Oriental, having been sometimes seen of the size of a hen's egg, and even far larger. It is grey or brown, rather than olive-coloured, and of a looser texture when broken. Bezoars of several other kinds are occasionally found in the stomachs of many animals, and even, as it is said, of Monkeys.

INDIAN ANTELOPE.

Antilope Oreas. *A. cornibus subulatis rectis carinato-contortis, corpore griseo.* Lin. Syst. Nat. Gmel. p. 190.

Slate-coloured Antelope, with rufous head, black mane on the neck and breast, and strait, tapering, wreathed horns.

Antilope Oryx. Pall. Misc. Zool. p. 9. spic. zool. 1. p. 15.

Le Coudous. Buff. 12. p. 357. t. 47. Le Canna. Suppl. 6. p. 116. pl. 12.

Indian Antelope. Pennant Quadr. 1. p. 78.

THE Oreas or Indian Antelope is one of the largest of the whole genus, and is found both in India and Africa, living in numerous herds: it is not much inferior in size to a cow, and is of a blueish grey or slate-colour, with the head of a bright bay: along the upper part of the neck, and a part of the back, runs a coarse black mane: on the breast is a very large pendent tuft of hair, as in the Nilgau: the tail is also tipped with long

black hairs : the horns are extremely stout, strait, sharp-pointed, and marked with two very thick prominent wreaths or spires * : they are sometimes above two feet in length, and are of a blackish colour. The Oreas is said to be an animal of great strength, and it has been thought not impracticable to train it to agricultural purposes, in the same manner as the horse or ox. It is said sometimes to grow extremely fat, so as to be easily run down. The flesh is reckoned extremely good ; and the skin is very strong and serviceable for the purpose of leather. The female is said to be horned like the male.

OUREBI.

Antilope Ourebi. *A. fusco-ferruginea, pectore abdomine clunibusque albis, cornibus rectis.*

Ferruginous-brown Antelope, with the breast, belly, hind part of the thighs, and insides of the limbs, white, and small strait horns.

Ourebi. *Allam. Suppl. Buff. 5. p. 33. pl. 12.*

Ourebi Antelope. *Pennant Quadr. 1. p. 79.*

THIS, which seems much allied to the Ritbock or *A. arundinacea*, is thus described by Mr. Pennant, from Mr. Allamand's Supplement to the Count de Buffon's History of Quadrupeds :

* These are scarcely expressed with sufficient strength and fullness in the annexed plate.

"Antelope with small strait horns, small head, long neck, long pointed ears. Colour above a deep tawny, brightening towards the sides, neck, head, and legs; lower part of breast, belly, buttocks, and inside of thighs, white. Tail only three inches long, and black. Hair on the body short; under the chest long and whitish; on each knee a tuft of hair: the females are hornless: length three feet nine inches to the tail. Inhabits the country very remote from the Cape of Good Hope. Seldom more than two are seen together: they generally haunt the neighbourhood of fountains surrounded with reeds. Are excellent venison."

I am not without some suspicion that this may be only a variety of the Ritbock, described among the Antelopes with curved horns.

KLIPSPRINGER.

Antilope Oreotragus. *A. cornibus rectissimis subulatis, basi parum rugosis, capite rufo, corpore ex flavo-virescente subtus ex albo cinereo, cauda brevissima.* Lin. Syst. Nat. Gmel. p. 189.

Yellowish-tawny Antelope, whitish beneath, with very strait upright tapering horns, slightly wrinkled at their base.

Antilope Oreotragus. Schreb. Quadr. t. 259.

Le Klippspringer, ou Sauteur des Rochers. Buff. Suppl. 6. pl. 22.

Klipspringer Antelope. Pennant Quadr. 1. p. 80.

THIS species is to be numbered among the late acquisitions in natural history; having been first described by Dr. Forster.

It is a native of Africa, and is known to the Dutch residents at the Cape of Good Hope by the name of Klipspringer. It inhabits the highest and most inaccessible parts of the rocky mountains beyond the Cape; leaping with surprising agility, from crag to crag, over the most tremendous abysses. Its size is that of a Roebuck, and its colour pale yellowish tawny, accompanied with a very slight greenish tinge: the horns are quite strait, slender, upright, and sharp-pointed: they are slightly wrinkled at the base, and are about five inches in length. The female is said to be destitute of horns, and has the head marked by some black or dusky streaks: the tail is extremely short, so as to be scarce visible. The flesh of the Klipspringer is much esteemed as an article of food. The Count de Buffon, in his sixth supplemental volume, seems to consider this species as a variety of the Nagor or Red Antelope.

HARNESSED ANTELOPE.

Antilope Scripta. A. cornibus subulatis rectis contortis, corporis strigis, albis decussatis. Lin. Syst. Nat. Gmel. p. 191.

Chesnut-coloured Antelope, with white crossed stripes on the sides, and strait tapering wreathed horns.

Le Guib. Buff. 12. p. 305. 327. pl. 40, 41. f. 1.

Harnessed Antelope. *Pennant Quadr. 1. p. 81.*

THIS, which is numbered among the smaller Antelopes, is of an elegant tawny chesnut-colour both above and below; each side of the body



HARNESSSED
ANTELOPE.

being marked by two longitudinal bands of white, crossed, at nearly equal distances, by two transverse ones: the rump is also marked on each side by two white descending stripes; and the thighs are variegated with seven or eight roundish white spots; the cheeks have a white spot or patch beneath the eye, and the under part of the throat is of the same colour: the tail measures ten inches, and is covered with long and rough hair: the horns point backwards, and are nine inches long, of a black colour, and marked by two spiral ribs or wreaths. This elegant species is a native of Senegal, living in woods, in large herds. It is said to be known by the Dutch at the Cape under the name of Bonte Bock, or Spotted Goat. It seems to have been first mentioned by Kolben, in his account of the Cape of Good Hope; but was first distinctly described, as well as elegantly figured in the Count de Buffon's History of Quadrupeds, under the title of *Guib*. The description was drawn up from a skin, brought over in good preservation by Mons. Adanson from Senegal, and which measured about four feet and a half from nose to tail, and about two from the hind feet to the top of the back. The hair was very short, glossy, and close set.

GUINEA ANTELOPE.

Antilope Grimmia. *A. cornibus conicis compressis rectissimis rugoso-striatis, hinc detritis, fossa suboculari atra.* *Lin. Syst. Nat. Gmel. p. 191.* *Pall. Misc. Zool. p. 8. n. 14.* *Spic. Zool. I. p. 15.* *12. p. 18. n. 18.*

Yellowish-bay Antelope, with short strait horns, and black bristly tuft on the forehead.

Moschus Grimmia. *M. capite fasciculo tophoso.* *Lin. Syst. Nat. p. 92.*

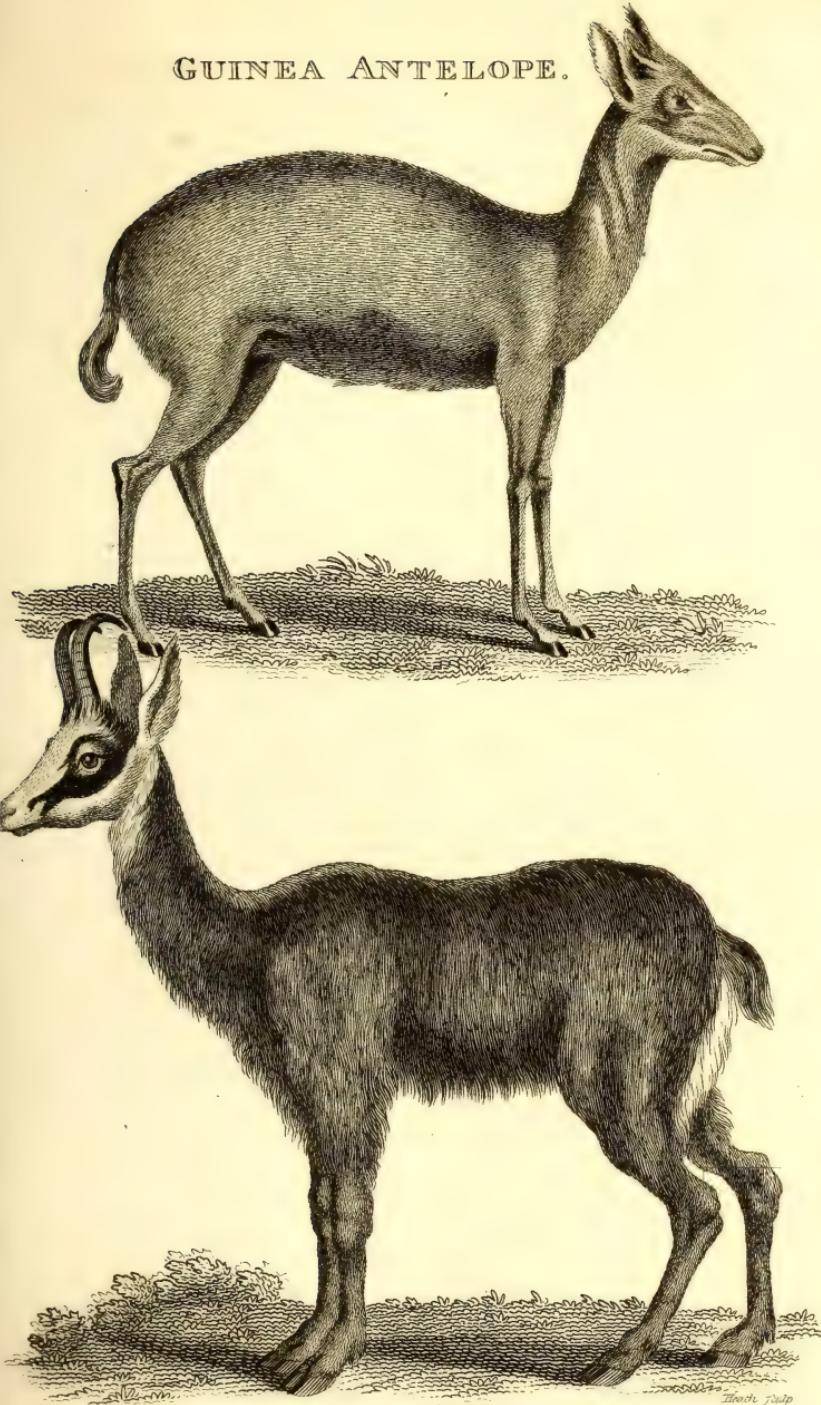
Capra sylvestris Africana. *Grimm. Misc. Nat. Cur. dec. 2. a. 4. p. 131. f. 13.*

Guinea Antelope. *Pennant Quadr. I. p. 81.*

THIS species is named in memory of its first describer, Dr. Grimmius, to whom we owe an ample and accurate account both of its form and manners. By Linnæus it was arranged under the genus *Moschus*, the specimen described by Dr. Grimmius having been a female, and destitute of horns.

The Guinea Antelope, or Grimm, is considerably smaller than a Roebuck, and is of an elegant and lively aspect. Its colour on all parts, except the throat, abdomen, and insides of the thighs, where it is pale cinereous, is a beautiful light yellowish or tawny brown: like most other quadrupeds, however, it differs as to the intensity of its colour; and the specimen described by Mr. Vosmaer, at the Hague, had a black stripe on the forehead, and a blackish or dusky cast on the upper parts of the body. The horns are very

GUINEA ANTELOPE.



CHAMOIS.

short *, thick at the base, very slightly annulated to a small distance beyond, and are sharp-pointed, smooth, and black : the limbs are slender ; the tail rather short, blackish above, white below, and is somewhat flocky or loose-haired ; but what principally distinguishes this species is an upright pointed tuft of strong black hairs rising from the top of the forehead, between the horns, to the height of about two inches and a half: the sinus lachrymalis, as in many other antelopes, is extremely conspicuous.

The Grimm is found in several parts of Africa, extending, according to Dr. Pallas and Mr. Pennant, from Guinea to the Cape of Good Hope ; residing principally in places overgrown with brushwood, into which it may retire on the approach of danger. In the Leverian Museum is a very beautiful specimen of this animal, which is elegantly figured in the Museum Leverianum, and is introduced into the present work.

* Dr. Gmelin, in his edition of the *Systema Naturæ*, speaks of the horns as being eighteen inches long ; probably mistaking Mr. Pennant's expression, "*height 18 inches*," by which he means the height of the animal itself.

PYGMY ANTELOPE.

Antilope Pygmæa. *A. cornibus brevibus convexis basi rugosis.*

Lin. Syst. Nat. Gmel. p. 191.

Bay Antelope, with strait short convex horns, wrinkled at the base.

Cervus juvencus perpusillus. *Seb. Mus. 1. p. 70. t. 43. f. 3.*

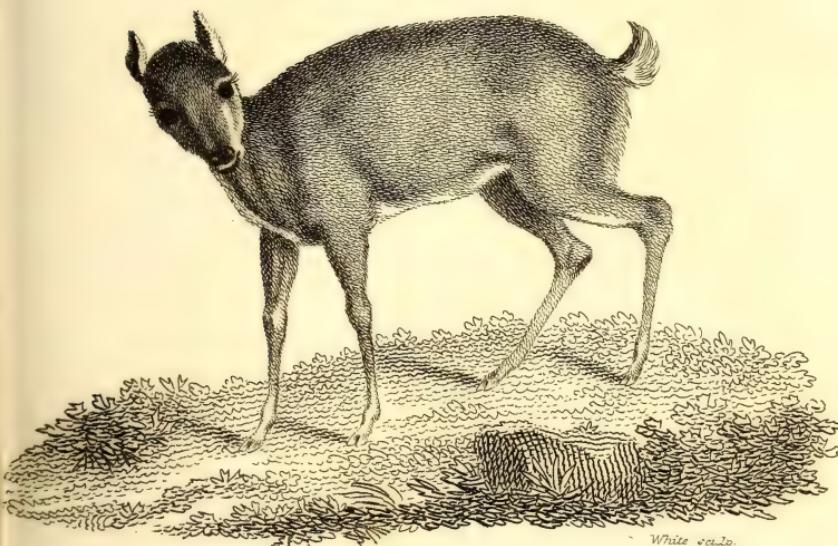
Le Chevrotain de Guinéé. *Buff. 12. p. 315. pl. 43. f. 2. (the horns.)*

Royal Antelope. *Pennant Quadr. 1. p. 82.*

THIS beautiful and diminutive species appears to have been frequently confounded with the *Moschus pygmæus*, or Pygmy Musk, which it resembles in size as well as in colour and manners. It is a native of the hottest parts of Africa, and is easily tamed, but is of so tender a nature as not to admit of being brought in a living state into Europe. So remarkable are its powers of activity in its native regions, that it is said to be able to leap over a wall of twelve feet high. Its colour is a bright bay, paler beneath, and on the insides of the limbs; and its height not more than nine inches. The horns are strait, short, strong, sharp-pointed, smooth, and perfectly black. The legs are scarcely thicker than a quill, and have been used for similar purposes with those of the *Moschus Pygmæus*. The female is said to be hornless.



PYGMY ANTELOPE. *male & female.*





NILGHAU.

With curved, bent, or twisted Horns.

NILGHAU.

Antilope Picta. *A. cornibus antrorsum incurvis, cervice colloque jubatis, cauda longa floccosa, pedibus albo nigroque annulatis.*
Lin. Syst. Nat. Gmel. p. 184.

Slate-coloured Antelope, with the back of the neck and breast maned, the feet barred with black and white, and subtriangular tapering horns bending forwards.

Nyl-ghau. *Hunter. Phil. Trans. vol. 61. p. 170. pl. 5.*

Nil-Gaut. *Buff. Suppl. 6. p. 101. pl. 10, 11.*

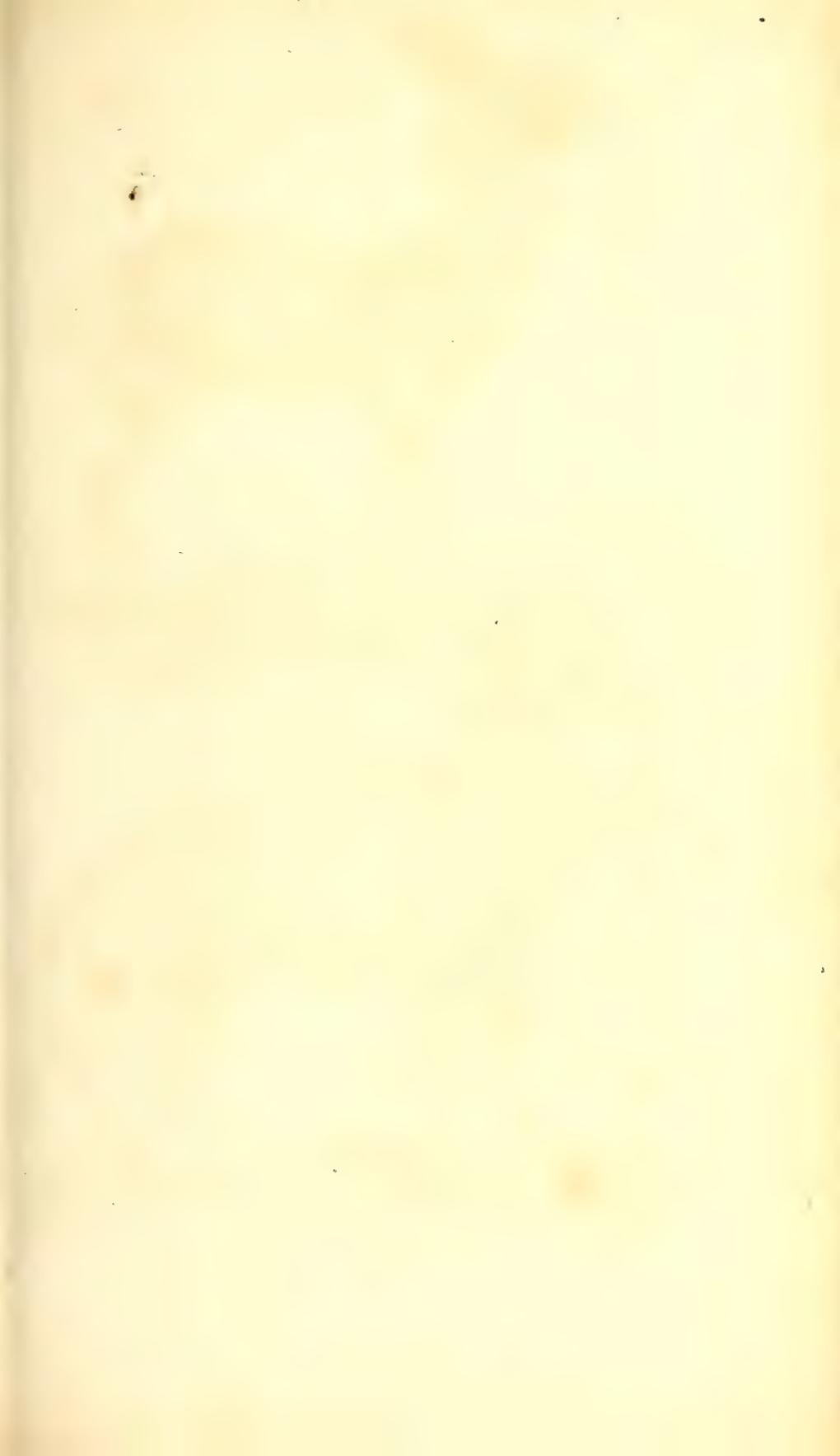
White-footed Antelope. *Pennant Quadr. 1. p. 83.*

THE Nilgau, or White-footed Antelope, is a large and beautiful species, known only within the space of a few years past. Its height, as given by Dr. William Hunter, in the Philosophical Transactions, is four feet one inch to the top of the shoulders, and its length, from the bottom of the neck to the base of the tail, four feet. The colour of the Nilgau is a fine dark grey or slate-colour, with a large spot of white beneath the throat, and two white bands or marks above each foot: the ears are large, white within, and edged with the same colour; and marked internally by two black stripes: along the top of the neck runs a slight mane of black hair, which is continued to some distance down the back; and on the breast is a much longer mane or hanging tuft of a similar colour: the tail is moderately long, and terminated by a tuft of black hair: the horns are short, pointed, smooth, triangular at their base,

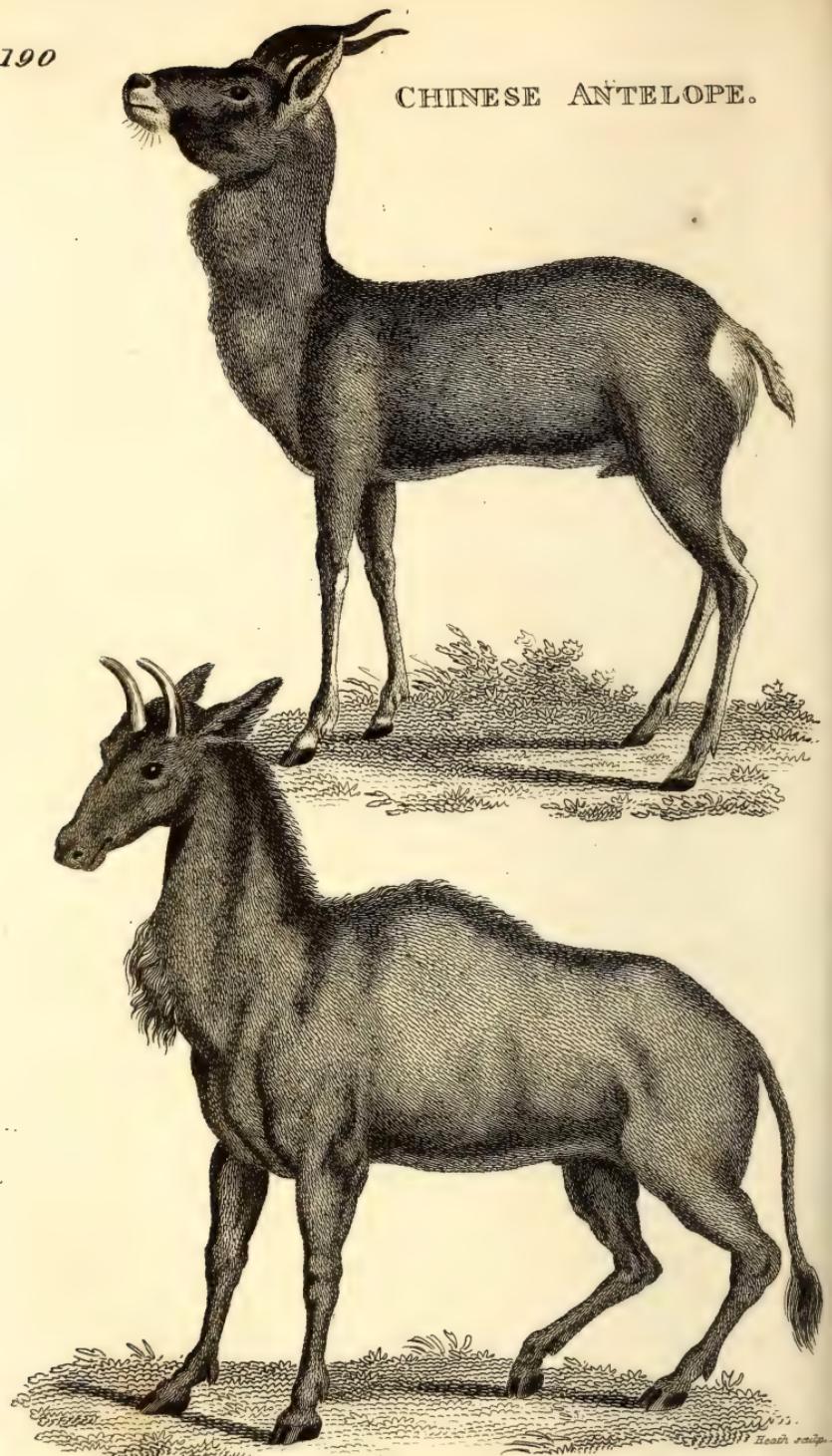
distant from each other, bent very slightly forwards, and of a blackish colour. The female resembles the male in general appearance, but is considerably smaller, of a pale brown colour, and is destitute of horns: the mane, pectoral tuft, and ears, resemble those of the male, and the feet are marked above the hoofs by three transverse bars of black and two of white.

The Nilgau is a native of the interior parts of India. According to Mr. Pennant, it abounded, in the days of Aurengzebe, between Delli and Lahor, on the way to Cashmire, and was called Nyl-Gau, or the blue or grey bull. It was one of the objects of the chace with that mighty monarch during his journey: they were inclosed by his army of hunters within nets, which being drawn closer and closer, at length formed a small precinct, into which the King and his *Omrahs* and hunters entered, and killed the Nilgaus with arrows, spears, and musquets; and that sometimes in such numbers, that Aurengzebe used to send quarters as presents to all his great people.

The Nilgau has of late years been often imported into Europe, and has bred in England. In confinement it is generally pretty gentle, but is sometimes seized with fits of sudden caprice, when it will attack with great violence the objects of its displeasure. When the males fight, they drop on their knees at some distance from each other, and gradually advance in that attitude, and at length make a spring at each other with their heads bent low. This action, however, is



CHINESE ANTELOPE.



INDO STAN ANTELOPE.

not peculiar to the Nilgau, but is observed in many others of the Antelope tribe.

The Nilgau is said to go with young about nine months, and to produce sometimes two at a birth: the young is of the colour of a fawn.

The elegant figure of this animal in the Philosophical Transactions is represented in the present work. A good figure both of the male and female may also be found in the sixth supplemental volume of the Count de Buffon's History of Quadrupeds.

INDOSTAN ANTELOPE.

Antilope Tragocamelus. *A. cornibus antrorsum incurvis, cervice jubata, dorso gibbo, cauda longa floccosa.* Lin. Syst. Nat. Gmel. p. 184.

Grey Antelope, with maned neck and breast, dorsal protuberance, long flocky tail, and tapering horns bending forwards.

Quadruped from Bengal. Parsons, Phil. Trans. No. 476. p. 465. pl. 3. f. 9.

Biggel. Mandelslo's Voy. Harris's Collect. 1.

Indostan Antelope. Pennant Quadri. 1. p. 83.

THE Indostan Antelope appears to have been first properly described by Dr. James Parsons, in the Philosophical Transactions. It is of a far less elegant appearance than the rest of the Antelopes, and seems to partake, in some degree, of the form of a Camel, having a strong, bending neck, and a large elevation or protuberance over the shoulders. Along the neck runs a short mane; and the protuberance before-mentioned is covered

or tufted with long hair: the breast is furnished with a kind of dewlap, or loose pendent skin, resembling that of a cow: the hind part of the animal is small in proportion to the fore: the limbs are slender, and the tail is nearly two feet in length, and terminated by a hairy tuft.

This highly singular animal is a native of India, and in its habits and manner of lying down is said to resemble a camel. The height of the specimen described by Dr. Parsons was thirteen feet to the top of the shoulders: the horns were seven inches long, bent slightly forwards, and the eyes were black and lively. Its colour was a light grey, with a dusky tinge on some parts: on the forehead was a black rhomboidal spot or patch: the lower part of the breast and under part of the tail white: its voice is said to be hoarse and croaking.

CERVINE ANTELOPE.

Antilope Bubalis. A. cornibus crassis lyrato-contortis rugosis, apice directis, capite caudaque elongatis. Lin. Syst. Nat. Gmel. p. 188.

Reddish-brown Antelope, with large elongated head, thick, strongly-wrinkled, lyrated * horns, and longish tail.

Buselaphus. Gesn. Quadr. 121.

Vache de Barbarie. Mem. de l'Acad. 1. p. 205.

Le Bubale. Buff. 12. p. 294. pl. 37, 38. (the horns) and Suppl. 6. p. 133. pl. 14.

Cervine Antelope. Pennant Quadr. 1. p. 102.

THIS species is said to be common in Barbary, and in all the northern parts of Africa. It is also found, though less frequently, in many other parts of that continent, and even extends as far as the Cape of Good Hope. It is supposed to have been the Bubalus of the ancients, instead of the common Buffalo, as sometimes erroneously imagined. In its general form it seems to partake of the stag and heifer, having a large head, like that of an ox ; and a thick broad nose. The height of the animal, when measured to the top of the shoulders, is about four feet; the general colour a reddish brown, white about the rump, insides of the limbs, and lower part of the belly : the upper part of the fore legs is marked in front by a dusky patch ; as is also the hind part of the thighs ; and on the upper part of the back is a stripe

* Meaning such as when viewed in front bear a greater or less resemblance to the form of the ancient lyre.

of the same colour. The horns bend outwards and backwards, and are very strong, and black, thickly or coarsely annulated, towards the base, and seated pretty close to each other on the head: they are about twenty inches in length, and eleven inches round at the base: the teeth are large, the lower lip black, with a sort of tuft of bristles on each side: along the snout and forehead runs a black band, terminated at the forehead by a tuft of hair between the horns. Dr. Forster surmises this animal to be the same with the Koba of Buffon, or at least very nearly allied to it: indeed it must be confessed that some of the species of this genus seem not very clearly ascertained. Dr. Forster mentions dark or black stripes on each side the head in this animal; but of these there is no appearance in the figure given in the sixth supplemental volume of the Count de Buffon's Natural History. Mr. Allamand, in his description, says the face is divided into two equal parts by a black band or stripe running from the nose to the top of the forehead. The figure given by Mr. Allamand is selected for the present work: the horns seem to differ considerably from those represented in a figure published by Buffon, having a remarkable interval or smooth space about the middle of the horn, which is annulated above and below it. This figure, however, having been taken from the living animal, may be supposed the most faithful of any yet published. The female has been represented in the Anatomical History of Animals, published in the Memoirs of the French

Academy, where it is called by the title of *Barbary Cow, Vache de Barbarie*. The specimen described by the Academicians seems to have been a very large one, since it is said to have been of the size of a cow. The learned Dr. Caius, who flourished in the reign of Queen Elizabeth, has given a good description of this animal under the name of *Buselaphus*. His description was transmitted to Gesner, and may be found in that author's work on quadrupeds. Mr. Pennant's figure seems to be taken from a young or half grown specimen of the female, in which the horns had not arrived at their full size. Mr. Pennant, however, is of opinion, that the animal described by Dr. Pallas and Mr. Allamand, under the title of Antilope Bubalis, and which, as before-mentioned, is introduced into the present publication, is in reality a different species, which he describes in the following manner, under the title of SENEgal ANTELOPE.

"Antelope with horns almost close at the base, a little above bending greatly; then approach again towards the ends, and recede from each other towards the points, which bend backwards; the distance in the middle six inches and a half; above that four inches; at the point six; length seventeen inches; circumference at the bottom eight; surrounded with fifteen prominent rings; the ends smooth and sharp: the head large and clumsy, eighteen inches long: ears seven: head and body of a light reddish brown: down the hind part of the neck a narrow black list: rump

a dirty white: on each knee, and above the fetlocks, a dusky mark: hoofs small: tail a foot long, covered with coarse black hairs, which hang far beyond the end. Length of a whole skin seven feet. Inhabits Senegal, where the French call it *La grande Vache brune.*"

It is to this animal that Mr. Pennant supposes Dr. Caius's description in Gesner to refer, as well as that of the *Koba* of Buffon.

STRIPED ANTELOPE.

Antilope Strepsiceros. *A. cornibus spiralibus carinatis subrugosis, corpore strigis transversis & spinali albis.* Lin. Syst. Nat. Gmel. p. 192.

Rufous-grey Antelope, with compressed spirally ridged horns; white longitudinal dorsal and transverse lateral stripes.

Strepsiceros, Gesn. Quadr. p. 295. 333. ic. 31.

Bos Strepticeros. Aldr. bisulc. p. 368. fig. p. 369.

Le Condoma. Buff. 12. p. 301. pl. 39. f. 1, 2. (*the horns*) Suppl. 6. p. 124. pl. 13.

Striped Antelope. Pennant Quadr. 1. p. 88.

THE Striped Antelope is a native of the country about the Cape of Good Hope, where it is said to be called *Coedoes*. It is one of the larger kinds of Antelopes, measuring near nine feet in length, and being four feet high. Its colour is a rufous-grey with the face brown marked by two white lines, each proceeding from the corner of the eye, and uniting in a pointed form on the top of the nose, which is smooth and black: down the forehead runs a broad dusky stripe, and a streak of

the same colour is continued down the upper part of the neck : the lower part of the back is marked by a white stripe, from which proceed several others, each about an inch broad, down the sides of the animal, three or four of them falling over the upper part of the thighs : along the top of the neck and back runs a kind of loose mane or ridge of hair of greater length than on other parts, and a much longer one proceeds from the throat down the breast : the tail somewhat resembles that of an ass, and is terminated by long flocky hairs : the horns are of a slightly compressed form, and are marked in a singular manner by a strongly prominent spiral ridge, running in a very oblique direction from the base to the point : their surface is naturally somewhat roughish, but those which are generally seen in Museums appear to have been rubbed or smoothed, so as to appear with a polished surface : they are nearly four feet long, and are very close at their bases, and about two feet and a half distant at the tips. The female of this species is said by Mr. Pennant to be destitute of horns, but Dr. Pallas affirms that it is horned like the male. The number of white stripes in this animal seems to vary. In that figured in the work of Mr. Schreber there are only four stripes on each side the body ; while in that of Mr. Pennant are nine : two white stripes also run on each side the cheek in the former figure, while in the latter are merely a few interrupted spots, instead of a lower or secondary stripe : indeed Mr. Klockner, in his description of the animal, informs us that he

had observed the stripes to vary considerably both in number and disposition on different skins. These animals are of an extremely active nature, and leap with extraordinary agility. Dr. Forster assures us that he has seen them clear a fence of ten feet high. They are said to be pretty easily tamed. One was brought from the Cape of Good Hope in the year 1766, and deposited in the menagerie of the Prince of Orange.

COMMON ANTELOPE.

Antilope Cervicapra. *A. cornibus spiralibus teretibus annulatis, corpore fulvescente obumbrato.* Lin. Syst. Nat. Gmel. p. 192.

Tawny-brown Antelope, white beneath, with round, lyrated, and annulated horns.

Capra Cervicapra. *C. cornibus teretibus dimidiato-annulatis, flexuosis contortis.* Lin. Syst. Nat. p. 96.

Gazella Africana, v. **Antilope.** Charlet. Exerc. p. 67. Raj. Quadr. p. 79. n. 4. Grew. Mus. p. 24.

Common Antelope. Pennant Quadr. 1. p. 89.

OF this numerous tribe there is perhaps no species more truly elegant in its appearance than the present, which is a native of many parts of Africa, as well as of India. It is particularly frequent in Barbary. Its general size is somewhat smaller than that of a fallow deer, and its colour is a reddish tawny brown above, and white below; the insides of the limbs are white, and on the head, back, and outsides of the limbs, the hair is darker than on other parts: the orbits of the eyes are



COMMON ANTELOPE.

male & female.

white, and this colour is generally continued into a white spot or patch on each side the forehead : the muzzle is black : the horns are of a peculiarly beautiful form, having a double flexure, first inwards, and again outwards : their colour is black, and they are very elegantly and distinctly marked throughout almost their whole length, by numerous prominent rings : their general length is about fourteen inches, and they are about sixteen inches distant from each other at the tips.

In Barbary this species seems to be somewhat larger than in India. Dr. Pallas has described and figured a specimen of this latter race, some of which were brought from Bengal into Holland, where they lived several years, and even produced young. He informs us that they are about three years in arriving at their full growth and perfection, and that the females are principally distinguished by their want of horns, and by a white band or stripe on the flanks : the tail is black above and white below. Though this species is one of the most common of the Antelopes, yet its particular habits and history in its state of natural wildness seem still but imperfectly known.

GAMBIAN ANTELOPE.

Antilope Lerwia. *A. cornibus recurvis rugosis, corpore rufescente, nucha barbata.* Lin. Syst. Nat. Gmel. p. 182.

Rufous Antelope, with the nape of the neck bearded, and re-curved wrinkled horns.

Kob. Buff. 12. p. 210. 267. t. 32. f. 1.

Gambian Antelope. Pennant Quadr. 1. p. 104. n. 50.

THIS seems a species not very distinctly understood. Mr. Pennant characterises it thus : "Horns thirteen inches long ; five inches and a half round at the bottom ; pretty close at the base and points ; very distant in the middle ; surrounded with eight or nine rings ; smooth at their upper part." Mr. Pennant, in his synonyms annexed, quotes the species slightly mentioned by Buffon under the title of *Kob*, which he says is about the size of a fallow deer, and has horns not more than a foot in length, with eight or nine rings, and bearing a great resemblance to those of the Gazelle and Kevel ; but that the form of the head is different, the muzzle being longer, and there being no pits under the eyes. The head figured in Mr. Pennant's History of Quadrupeds seems greatly to resemble that of the *Senegal Antelope*, or supposed variety of the *Bubalis*. It is said to occur chiefly in the north of Africa, about the rivers *Gambia* and *Senegal*.

SAIGA.

Antilope Saiga. *A. cornibus distantibus lyratis pallido-diaphanis, naso cartilagineo ventricoso.* Lin. Syst. Nat. Gmel. p. 185.

Yellowish-grey Antelope, with distant, semitransparent, lyrated, and annulated horns.

Capra Tatarica. *C. cornibus teretibus rectiusculis perfecte annulatis apice diaphanis, gula imberbi.* Lin. Syst. Nat. p. 97.

Colus. Gesn. Quadr. p. 893.

Suhac. Aldr. bisulc. p. 763.

Saiga. Buff. 12. p. 198. pl. 22. f. 1. (*the horns*)

Scythian Antelope. Pennant Quadr. 1. p. 98.

THE Saiga, or Scythian Antelope, is an inhabitant, according to Dr. Pallas and Mr. Pennant, of all the deserts from the *Danube* and the *Dnieper* to the river *Irtish*, but not beyond; nor is it ever seen to the north of 54 or 55 degrees of latitude. It is therefore found in Poland, Moldavia, about Mount Caucasus, and the Caspian sea, as well as in the dreary open deserts of Siberia, where salt-springs abound, feeding on the salt, acrid, and aromatic plants of those countries. It is about the size of a common or Fallow Deer, and is of a dull yellowish grey above, and white beneath, and along the back runs a dusky stripe. It is distinguished from all the rest of the Antelopes by the remarkable colour of its horns, which are of a pale yellow *, and semitransparent: they are strongly annulated for about two-thirds of

* The *A. gutturosa*, or next described species has also yellow horns, but not transparent.

their length from the base, and stand in a somewhat reclining position: they are distant at the base, and have three curvatures, the last of which points inwards: the head is rather large; the nose very thick, much arched, and divided longitudinally by a small furrow: the neck is slender, but prominent about the throat: the knees are furnished with tufts of hair, and the tail is about four inches long, naked below, but covered above with upright hairs ending in a tuft.

This animal has been described by Gesner and others under the name of *Colus*, but it is to Gmelin, Forster, and Pallas, that we are principally indebted for the complete knowledge of its nature and manners. They inform us that the Saigas are of a migratory disposition, collecting during the autumn into flocks of some thousands, and retiring into the southern deserts, and in the spring dividing themselves into small flocks, and returning northward, at the same time that the wandering tribes of Tartars change their quarters. The females go with young the whole winter, and bring forth in the northern deserts in May, producing only one young at a birth, which is covered with a soft curling fleece, like that of a new-fallen lamb. It is said that a flock of Saigas seldom lies down all at once, some always acting as a kind of centinels, and being relieved in their turn by others; and thus they preserve themselves from the attacks both of wolves and hunters. They are so extremely swift as easily to outstrip the fleetest horse, but cannot run for any great length

of time in this manner without stopping, as if to take breath. It is said, that if bit by a dog, they instantly fall down, without attempting to rise, being entirely disabled through extreme terror. In their flight they appear to incline to one side, and their course is so rapid that they scarcely seem to touch the ground with their feet. When taken young they may be easily tamed, but when caught at full age are so wild and obstinate as to refuse all kind of food.

These animals are hunted for the sake of their flesh, horns, and skins, which latter are said to be excellent for gloves, belts, &c. The hunters are careful to approach them against the wind, lest the animals should perceive them by their smell: they also avoid putting on red or white clothes, or any colours which might attract their notice. They are both shot and taken with dogs; and sometimes by a species of Eagle*, trained to this kind of falconry.

No animal is more subject to vary in its horns than this, but their remarkable colour and transparency will always point out the species. The females, like many others of this tribe, are destitute of horns. Specimens of Saigas have sometimes been seen with three horns, and sometimes with only one.

* The Black Eagle of Pennant. *Brit. Zool.*

CHINESE ANTELOPE.

Antilope Gutturosa. *A. cornibus lyratis, corpore rufescente scopis genuum nullis.* Lin. Syst. Nat. Gmel. p. 186.

Tawny Antelope, whitish beneath, with lyrated, yellowish annulated horns, and prominent throat.

Capra gutturosa campestris hydrophobos, &c. Messerschm.
Mus. Petrop. 1. p. 336. n. 12.

Chinese Antelope. *Pennant Quadr.* 1. p. 96.

THIS is a species which is said to abound in the southern parts of the deserts between Tibet and China, and in the country of the Mongol Tartars, frequenting principally the dry and rocky plains and hills of those regions, and feeding on the finer and more aromatic plants. The length of this animal is about four feet and a half, and its colour, in summer, tawny above and white beneath: but in winter of a whitish cast on all parts; the hair growing far thicker and longer during that season. The horns, like those of the Saiga or Scythian Antelope, are of a yellow colour, but opake; and are annulated almost to the tips: they are about nine inches long, have a backward direction, and diverge considerably at their upper part, though the points bend towards each other: the head is rather thick; the nose blunt, and the ears small and pointed; but one of the chief characters of the animal is a large protuberance in front of the neck, which is said to be owing to the very large size of the larynx or wind-pipe in that part. This species is called by the Chinese *Whang Yang*, or Yellow Goat. It is

extremely swift and active, and of a very timid disposition. It is generally seen in flocks, which are observed to be much larger or more numerous in winter than in summer. It is said to be so averse to water, that it will not go into it even to save its life, when driven by dogs to the brink of a river. If taken young, it may be easily tamed. Its flesh is much esteemed as a food, and the horns are in great request among the Chinese for various purposes. The female has no horns.

GULDENSTED'S ANTELOPE.

Antilope Subgutturosa. *A. cornibus lyratis, corpore supra ex cinerascente brunneo, infra niveo, fascia laterali ex albido lutescente.* Lin. Syst. Nat. Gmel. p. 186. Schreb. Saeugth. t. 270. B.

Grey-brown Antelope, white beneath, with lyrate horns, and tumid throat.

Guildenstedt's Antelope. *Pennant Quadr.* 1. p. 97.

THIS species was first described by Mr. Guldenstedt, in the Pittsburgh Transactions. He informs us that it is found in Persia, between the Caspian and the Black seas; that its size and general appearance is that of a Roebuck; that it is of a gregarious nature, and feeds principally on the Artemisia Pontica, or Pontic Wormwood. The horns are about thirteen inches long, and smooth at the tips. The colour of the animal is a cinereous brown above, with the belly and insides of the limbs, and space surrounding the tail, white: the tail is

short and full of hair. On the fore part of the neck is a protuberance, but not so large as in the preceding species. The flesh of this animal is reckoned extremely good.

SPRINGER.

Antilope Euchore. *A. fusco-flavescens, subitus alba, fascia laterali castanea, cornibus lyratis, plaga supra caudam expansili nivea.*

Yellowish-brown Antelope, white beneath, with dark lateral stripe, lyrated horns, and expansile white patch above the tail.

Antilope Euchore. *Forster, Schreb. 272.*

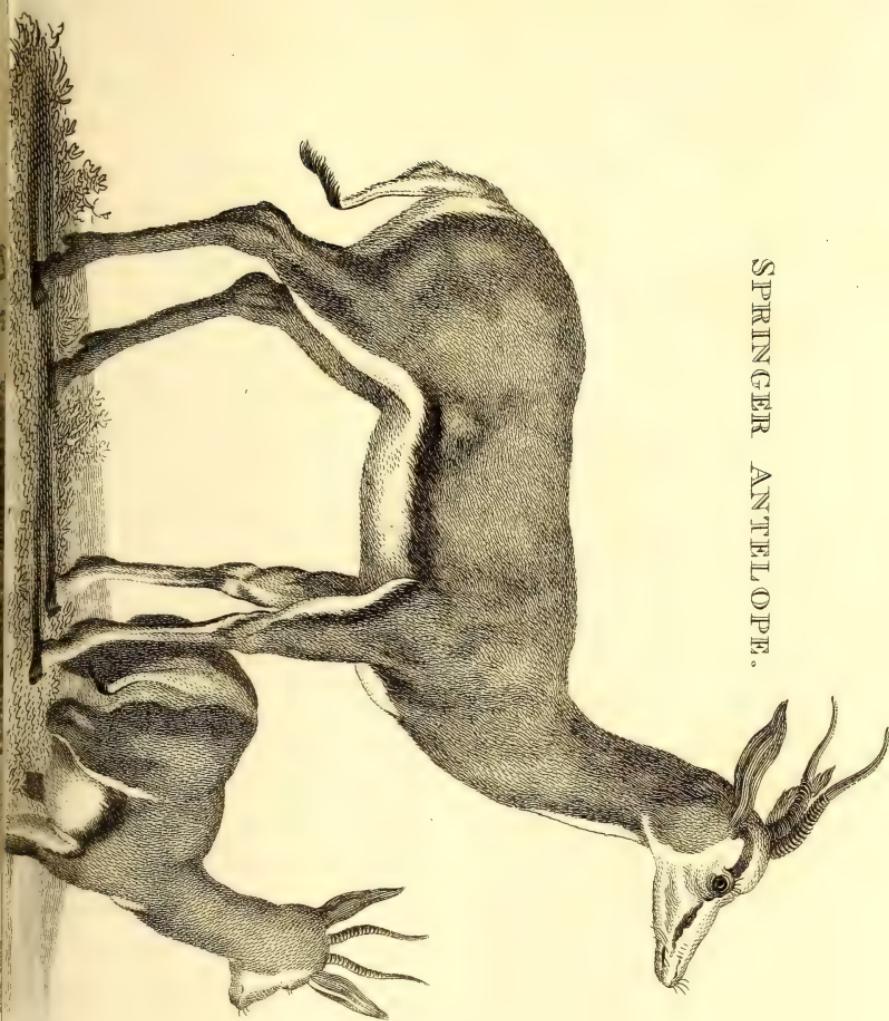
La Gazelle à bourse sur le dos. *Buff. Suppl. 6. p. 180. pl. 21.*

Springer Antelope. *Pennant Quadr. 1. p. 94.*

So complete is the information collected by Mr. Pennant relative to this beautiful species, that I shall deliver his description in his own words. It contains an epitome of all the particulars detailed by other authors.

“ Antelope with the face, cheeks, nose, chin, throat, and part of the under side of the neck, white: a dusky line passes from the base of each horn, and beyond the eyes to the corner of the mouth: horns slender, annulated half way, twice contorted; ears very long, dusky: whole upper side of the neck, part of the lower, the back, sides, and outside of the limbs, of a pale yellowish brown, darkest on the hind part of the neck: chest, belly, and insides of the limbs, white; the sides and belly divided by a broad band of chesnut,

SPRINGER ANTELOPE.



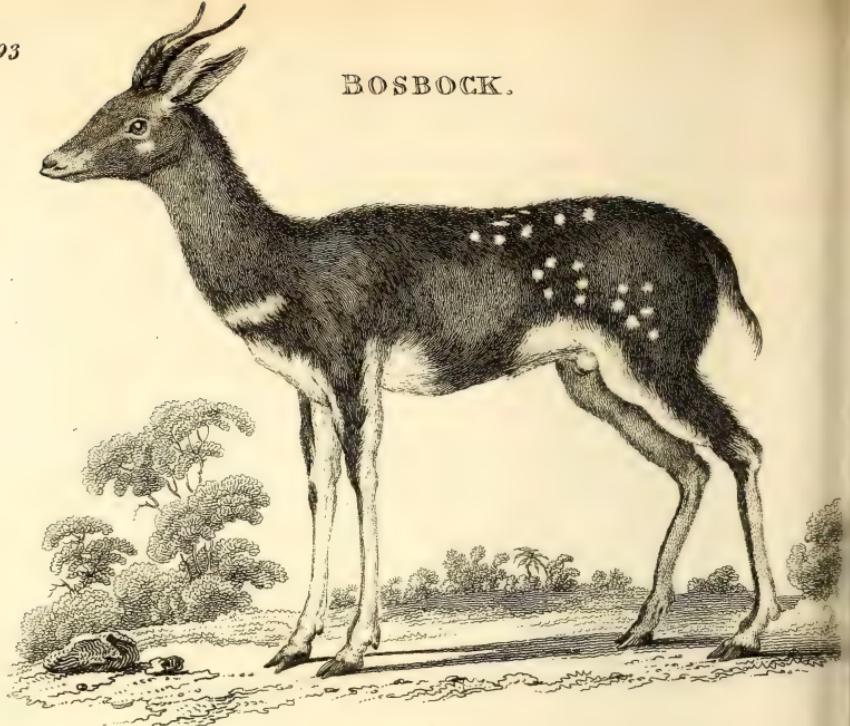
which runs down part of the shoulders: tail reaches to the first joint of the leg; the upper part is white, the lower black, and furnished with long hair; the under side appears nearly naked: buttocks white; and from the tail half way up the back is a stripe of white, expansible at pleasure.

" This elegant species weighs about fifty pounds, and is rather less than a Roebuck: inhabits the Cape of Good Hope: called there the *Spring-Bock*, from the prodigious leaps it takes on the sight of any body. When alarmed it has the power of expanding the white space about the tail into the form of a circle, which returns to its linear form when the animal is tranquil. They migrate annually from the interior parts in small herds, and continue in the neighbourhood of the Cape for two or three months; then join companies, and go off in troops consisting of many thousands, covering the great plains for several hours in their passage. Are attended in their migrations by numbers of lions, hyænas, and other wild beasts, which make great destruction among them. Are excellent eating, and, with other Antelopes, are the venison of the Cape. Mr. Masson informs us, that they also make periodical migrations, in seven or eight years, in herds of many hundred thousands, from the north, as he supposes, from the interior parts of *Terra de Natal*. They are compelled to it by the excessive drought which happens in that region, when sometimes there does not fall a drop of rain for

two or three years. These animals, in their course, desolate *Caffraria*, spreading over the whole country, and not leaving a blade of grass. Lions attend them: where one of those beasts of prey are, the place is known by the vast void visible in the midst of the timorous herd. On its approach to the Cape, it is observed that the avant guard is very fat, the centre less so, and the rear guard almost starved, being reduced to live on the roots of the plants devoured by those which went before; but on their return they become the avant guard, and thrive in their turn on the renewed vegetation; while the former, now changed into the rear guard, are famished by being compelled to take up with the leavings of the others. These animals are quite fearless, when assembled in such mighty armies, nor can a man pass through unless he compels them to give way with a whip or a stick. When taken young they are easily domesticated: the males are very wanton, and are apt to butt at strangers with their horns."

The expansile white part on the end of the back of this animal is a highly singular circumstance. It is formed by a duplicature of the skin in that part, the inside and edges being milk white; when the animal is at rest, the edges alone appear, resembling a white stripe, but when alarmed, or in motion, the cavity, or white intermediate space, appears in form of a large oval patch of that colour.

BOSBOCK.



RITBOCK.



RITBOCK.

Antilope Arundinacea. *A. cinerea subtus alba, cornibus annulatis antrorsum incurvatis.*

Ash-coloured Antelope, white beneath, with annulated horns bending forwards. .

Ritbock. *Allam. Suppl. Buff. 5. pl. 13.*

Buff. Suppl. 6. p. 187. pl. 23, 24.

Ritbock. *Pennant Quadr. 1. p. 87.*

THE Ritbock, or Ritrebock, so named from its chiefly frequenting reedy places, was first described by Mr. Allamand, to whom a specimen was sent by Captain Gordon. Mr. Allamand informs us, that its size is that of a Roebuck, and its colour a very elegant pale grey, with the throat, belly, hips, and insides of the limbs, white, but without any dusky line of separation along the sides of the body, as in many other Antelopes. The horns are black, glossy, slightly annulated for about half their length, and are about one foot three inches long, bent slightly forwards *, and sharp-pointed: the ears are very long, and near the base of each is a bare spot: the tail is eleven inches long, flat, and covered with long white hairs: the eyes are black and beautiful, with sinuses beneath. Mr. Allamand adds, that he received another specimen, which resembled the former entirely as to the horns, but differed in colour, being of a reddish tawny. The female

* The curvature of the horns is in that direction, but they are inclined very much backwards at the base.

Ritbock resembles the male in colour, but has no horns, and is rather smaller. Mr. Allamand farther informs us, that this animal is called by the Hottentots *ó, ei, á*, each syllable being pronounced with a kind of clacking of the tongue, not easily described or imitated by an European.

The Ritbocks are chiefly found about a hundred leagues to the north of the Cape of Good Hope, in woods, and among reeds and sedges in watery places. They go in small herds, and sometimes only in pairs.

BOSBOCK.

Antilope Sylvatica. *A. cornibus subspiralibus annulatis carinatis, apice lœvibus acutis, corpore supra fusco, postice albo maculato, infra potissimum albo.* Lin. Syst. Nat. Gmel. p. 192. Sparrm. Act. Stockh. 1780. n. 7. t. 7. Schreb. Saeugth. t. 257. B.

Brown Antelope, white beneath, the hind part of the body spotted with white; the horns subspirally keeled and annulated.

Bosbock. Allam. Suppl. Buff. 5. p. 37.

Buff. Suppl. 6. p. 192. pl. 25.

Forest Antelope. Pennant Quadr. 1. p. 86.

IN its general form this seems most allied to the Harnessed Antelope, but is said to be rather smaller. Like that species, it inhabits woods, and is found at a great distance above the Cape of Good Hope. Its colour is a dark brown above, and white beneath; the head and neck having somewhat of a rufous cast, and the thighs are marked with several small round white spots. The horns measure from ten to thirteen inches in length,

and are black, and marked, in a somewhat spiral direction, with circular rings. On the top of the neck and back is a slight appearance of a mane: the tail is about six inches long, and white. The female is said to be destitute of horns. The voice of the Bosbock resembles the barking of a dog.

CINEREOUS ANTELOPE.

Antilope Eleotragus. *A. cana, subtus nivea, cornibus spiralis annulatis.*

Grey Antelope, snow-white beneath, with spirally annulated horns.

Antelope Eleotragus. *Schreb. t. 256.*

Cinereous Antelope. *Pennant Quadr. I. p. 86.*

THIS is described by Mr. Pennant from one of Mr. Schreber's plates, of which the description is yet unpublished. It appears to be an elegant species, and is supposed to be a native of Africa. The head, hind part and sides of neck, back, sides, shoulders, and thighs, of a most elegant greyish ash-colour: front of the neck, breast, belly, and legs, pure white: horns marked with spiral wreaths. Mr. Pennant places it among those whose horns incline forwards.

BARBARY ANTELOPE.

Antilope Dorcas. *A. cornibus lyratis, corpore supra fulvo, subtus albo, fascia laterali fusca.* Lin. Syst. Nat. Gmel. p. 187.

Fulvous-brown Antelope, white beneath, with lateral brown band, and lyrated horns.

Capra Dorcas. *C. cornibus teretibus perfecte annulatis recurvatis contortis.* Lin. Syst. Nat. p. 96.

Antilope Dorcas. Pall. Spic. Zool. 12. 11.

La Gazelle. Buff. 12. p. 201. pl. 23.

Barbary Antelope. Pennant Quadr. 1. p. 92.

This species is about half the size of a fallow deer: its colour is reddish brown above, and white beneath; the two colours being separated by a dark or blackish lateral line or stripe: on each knee is a tuft of blackish hair: the horns are twelve inches long, of a round or cylindric form, and incline first backwards, then bend in the middle, and lastly, revert forwards at their tips: they are of a black colour, and are annulated with about thirteen rings on the lower part. This animal is supposed to be the *Dorcas* of Ælian, lib. 14. c. 14. It is a native of Barbary, Egypt, and the Levant, and is said to be found in large flocks.

FLAT-HORNED ANTELOPE,



FLAT-HORNED ANTELOPE.

Antilope Kevella. *A. cornibus lyratis majusculis compressis, tergore fulvescente, strigis pallidis, fascia laterali nigrescente.*
Lin. Syst. Nat. Gmel. p. 187.

Tawny-brown Antelope, white beneath, with brown lateral band, and compressed lyrated horns.

Le Kevel. *Buff. 12. p. 258. pl. 26.*

Flat-horned Antelope. *Pennant Quadr. 1. p. 92.*

THIS animal, in its general appearance, so exceedingly resembles the Barbary Antelope, that it might readily pass for a variety of the same species, were it not that the horns, instead of being round, are flattened on their sides, and marked by somewhat more numerous rings. Its size is that of a small roebuck, and it is chiefly found in Senegal, but is said to occur also in Barbary and in Persia. It lives in large flocks, and has an odor resembling that of musk.

WHITE FACED ANTELOPE.

Antilope Pygarga. A. fusco-ferruginea, subtus alba, fascia laterali fusca, clunibus albis, cornibus lyratis.

Ferruginous-brown Antelope, white beneath, with brown lateral band, white rump, and lyrated horns.

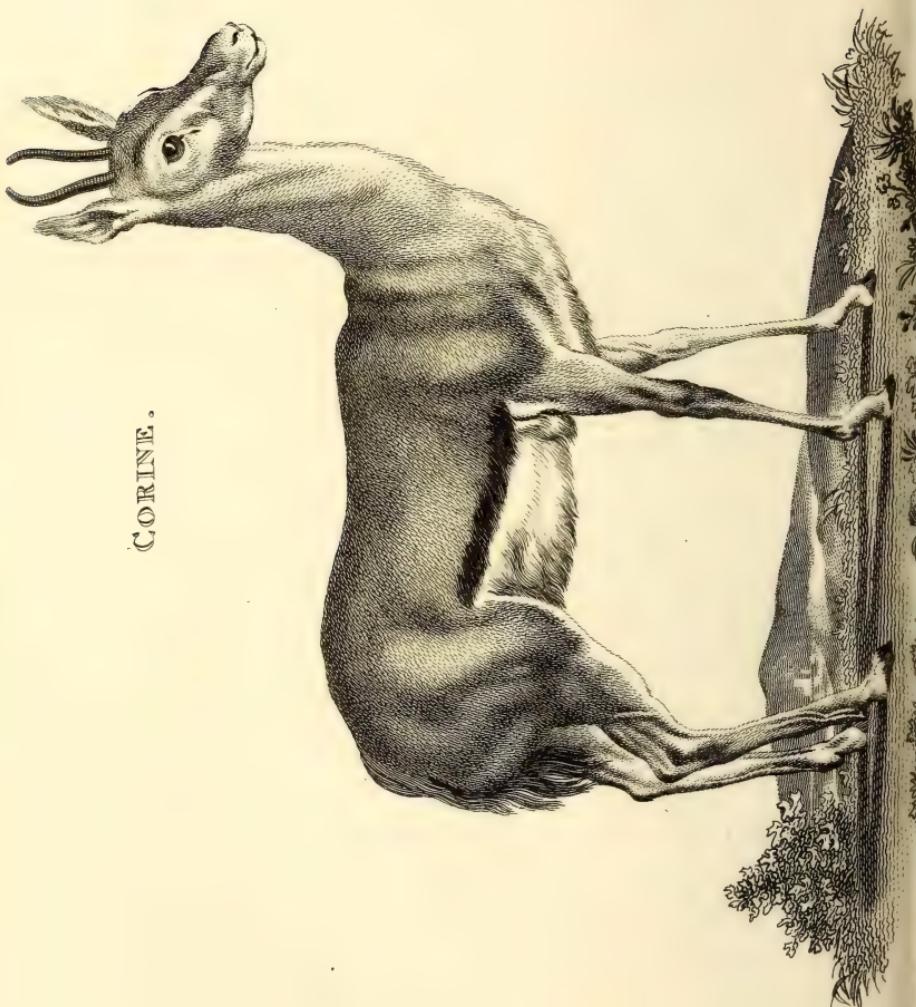
Antilepe Pygarga. A. cornibus lyratis, collo sanguineo, tergo rufo-canescente, fascia laterali saturata, clunibus albis. Lin. Syst. Nat. Gmel. p. 187.

Antilope Pygargus. Pall. Spic. Zool. 1. 10. and 12. 15.

White-faced Antelope. *Pennant Quadr. 1. p. 93.*

So great is the similitude between this species and the Flat-horned Antelope, that the chief difference appears to consist in size; this being larger than a fallow deer. The horns resemble those of the animal before mentioned, and are sixteen inches long, and about five between tip and tip: they are very strongly annulated in the male, but said to be nearly smooth in the female: the face is white; the cheeks and neck, in the living animal, of a bright bay; the back and upper parts of a ferruginous brown; with a dark stripe down the back: the belly and rump white, as is also, in the Leverian specimen, the lower half of the legs: the sides of the body are marked, as in many others of this genus, with a dark or blackish stripe: the tail is about seven inches long, covered with black hairs, which extend some inches beyond the end. The figure of the *Kevel*, or Flat-horned Antelope, in the sixth volume of the Count de Buffon's supplement, so perfectly represents this species, that it might pass

CORINE.



for a very good representation of it; and I must confess myself to be extremely sceptical as to the supposed specific distinction of this as well as of some other Antelopes.

The specimen preserved in the Leverian Museum measures rather more than three feet from the hoofs to the top of the shoulders, and about five feet to the top of the horns.

CORINE.

Antilope Corinna. *A. cornibus sublyratis rectiusculis tenuibus levigatis, corpore fulvescente subtus albo, fascia laterali capitinis fusco-alba.* Lin. *Syst. Nat. Gmel.* p. 188. *Pall. Misc. Zool.* p. 7. n. 10.

Fulvous-brown Antelope; white beneath, with dark lateral band, and sublyrated slender suberecrt smoothish horns.

Le Corine. *Buff.* 12. p. 205. *pl. 27.*

Corine Antelope. *Pennant Quadr.* i. p. 101.

THE Corine is somewhat smaller than a Roe-buck, and is a native of Senegal and other parts of Africa. Its colour is a pale tawny or ferruginous brown above, and white beneath; the two colours, as in many others of this genus, being separated on the sides by a dark line or band: the face is marked on each side by a white line, beneath which is another of black: the horns are very slender, about six inches long, somewhat erect in their growth, smooth, but surrounded with slightly marked wrinkles or circular spaces: on each knee is a tuft of hair, as in the Kevel and Gazelle: the ears are about four inches and a half

long, and the tail about three inches. In disposition and agility it agrees with the *Kevel*, or Flat-horned Antelope, of which it has even been suspected by Dr. Pallas to be the female. Mr. Adanson, in his account of this species communicated to the Count de Buffon, observes, that the wrinkles of the horns, which in this animal supply the place of rings in many others, are about sixteen in number, and are very near each other at the lower part of the horns, and more distant at the upper. He adds, that the hair is short, and close set, of a yellow colour on the back and flanks, and white on the belly and insides of the thighs; that the tail is black, and that some individuals are irregularly spotted on the body with white. The Corine, like the Kevel and Gazelle, is found in herds or troops.

SUMATRAN ANTELOPE.

Antilope Sumatrensis. *A. atra, cornibus recurvatis, juba inter humeros setosa albida.*

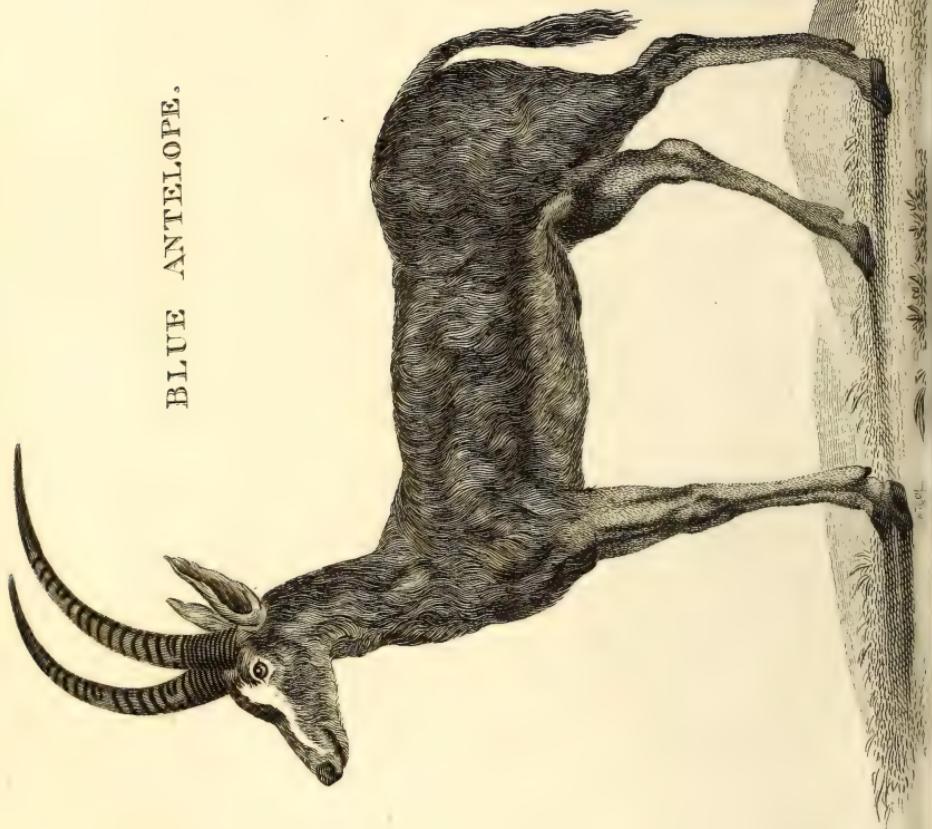
Black Antelope, with recurved horns, and whitish bristly mane between the shoulders.

Sumatran Antelope. *Pennant Quadr. 2. Addit. p. 321.*

Cambing Ootan. *Marsd. Sumatr. p. 93.*

THE Sumatran Antelope seems to have been first mentioned by Mr. Marsden, in his account of that island, under the name of *Cambing Ootan*, or Goat of the Woods. A specimen is preserved in the British Museum, which is about the size of

BLUE ANTELOPE.



a common goat, but stands considerably higher on its legs: its colour is an uniform black, but each hair, when narrowly examined, is grey towards the base: on the top of the neck, just above the shoulders, is a patch of whitish, bristly, long, strait hair, much stronger than the rest, and having somewhat the appearance of a partial mane: on each side the lower jaw is a longitudinal patch of yellowish white: the ears are of moderate size, marked internally with three obscure longitudinal bands of white, as in some other Antelopes: the horns are six inches long, bending slightly backwards, sharp-pointed, black, and annulated near half their length with prominent rings: the tail is about the length of the horns, and sharpish: the hoofs rather small, and black: the hair on the whole animal is rather harsh, and not lighter coloured below or on the belly than on the upper parts.

BLUE ANTELOPE.

Antilope Leucophæa. *A. Cornibus recurvatis teretiusculis annulatis, corpore cœrulescente.* Lin. Syst. Nat. Gmel. p. 182.

Blue-grey Antelope, with roundish, arcurated, recurved, annulated horns.

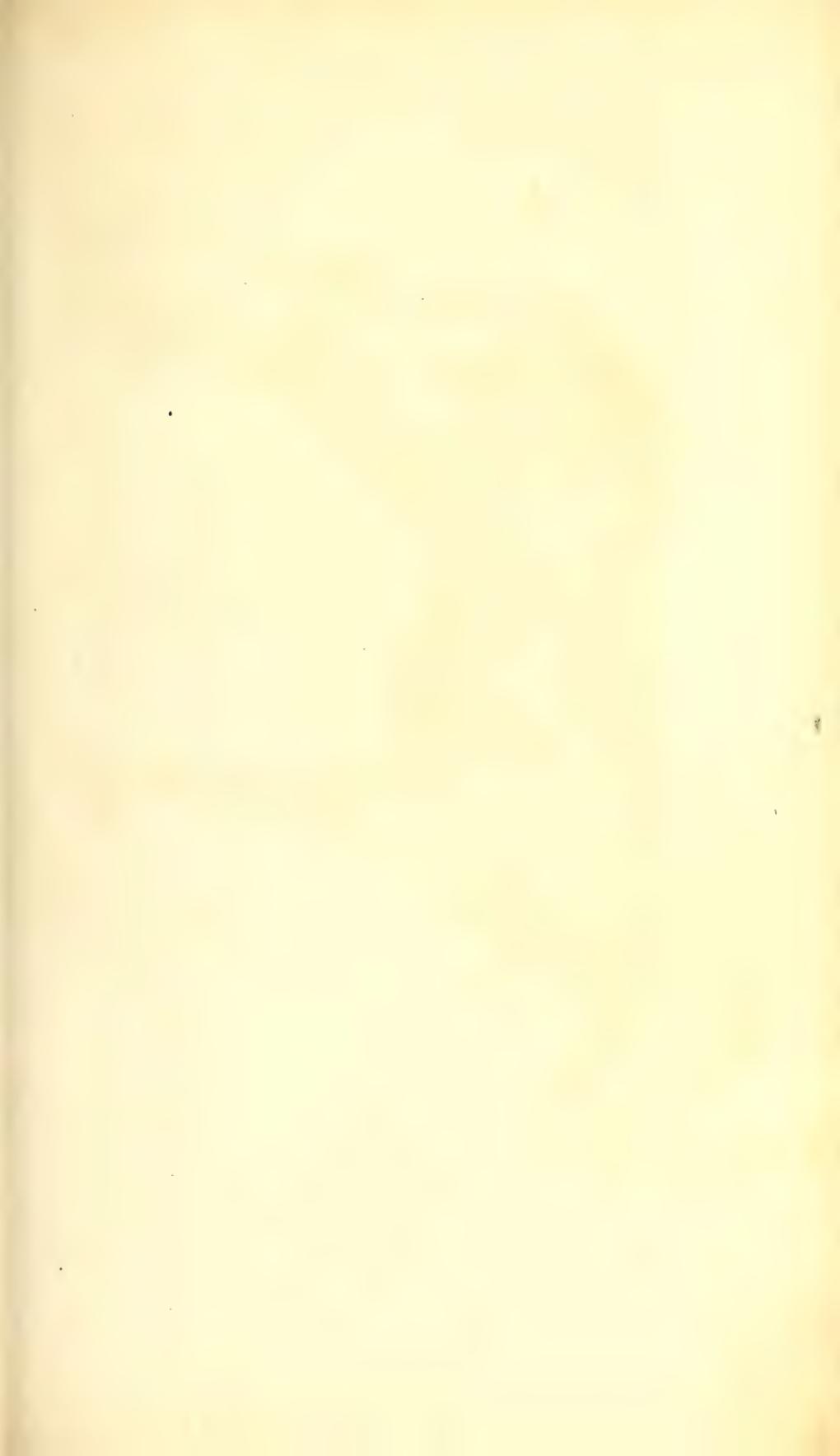
Blue Goat. *Kolben's Cape.* 2. p. 114.

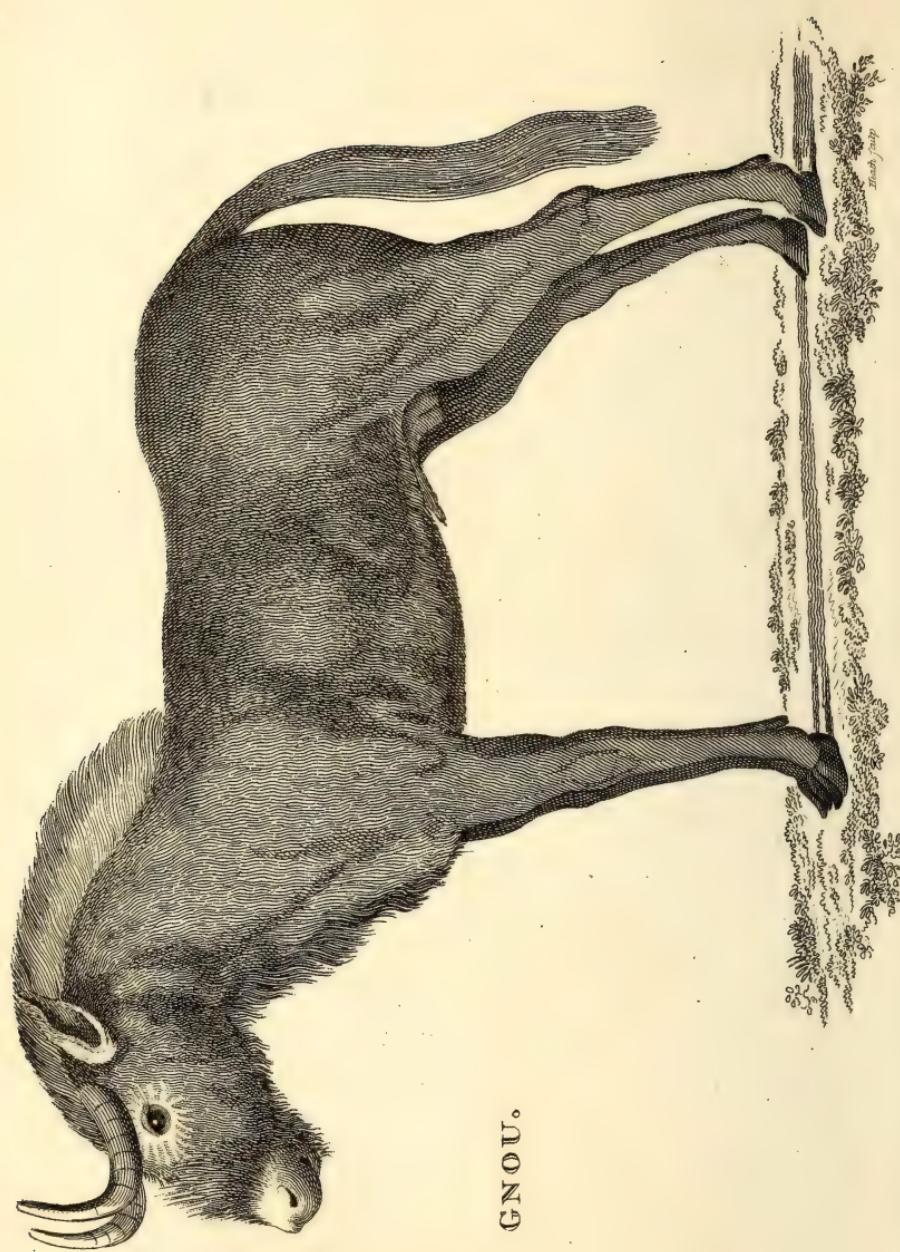
La Gazelle Tzeiran. *Buff. Suppl.* 6. p. 168. pl. 20.

Blue Antelope. *Pennant Quadr.* 1. p. 74.

THIS is a species of very considerable size, being larger than a fallow deer, and from the form of

its horns, and the length of its hair, may be said to connect, in some degree, the Antelopes with the Goats. It seems to have been first described by Kolben, in his account of the Cape of Good Hope, and is said to be found a great way up the country to the north of the Cape. It is to Dr. Forster and Dr. Pallas, that we owe its more accurate description and history. Dr. Forster informs us, that it is at present by no means uncommon at the Cape, and is there known by the name of the *Blue Goat*, on account of its colour, which is an elegant blueish grey, the blue cast being rather the effect of reflected light, than any inherent colour, since it entirely disappears in the dead animal, the hair then lying closer than during life, and not reflecting the light. The belly, insides of the legs, and tip of the tail, are white; and there is also a pretty large white spot beneath each eye: the horns are about eighteen or twenty inches long, slightly curved backwards, black, smooth, and marked with about twenty rings, which are more prominent on the inner side than the outer: the tail measures about seven inches, and is tipped with long hairs. The female is said to be horned as well as the male.





GNOU.

With hooked Horns.

GNOU.

Antilope Gnu. *A. cornibus basi antrorsum, versus medium retrorsum versis, corpore ferrugineo, cervice jubata, cauda ex albo cinerea.* Lin. Syst. Nat. Gmel. p. 189.

Ferruginous-brown Antelope, with maned neck, whitish tail, and horns directed forwards, and then suddenly backwards.

Bos Gnou. Zimmern. Journ. Histor. p. 53.

Le Gnou ou Niou. Buff. Suppl. 6. p. 89. pl. 8, 9.

Gnou Antelope. Pennant Quadr. 1. p. 70.

THE Gnou, or Ox-headed Antelope, is readily distinguished by the remarkable form of its horns, which are nearly smooth, very strong, pointed, projecting forwards to some distance from the base, and then pretty suddenly reverting upwards. It is a large species, equalling, or exceeding, when full grown, the size of a stag*, and is of a dull rufous-brown colour, with very long black hairs hanging from the breast: the chin and throat are also strongly bearded, and along the top of the neck to some distance down the back runs a very strong and somewhat upright mane of ash-coloured hair: the head is very large, the mouth square, the lips covered with short stiff bristles, and from the nose up the forehead runs a

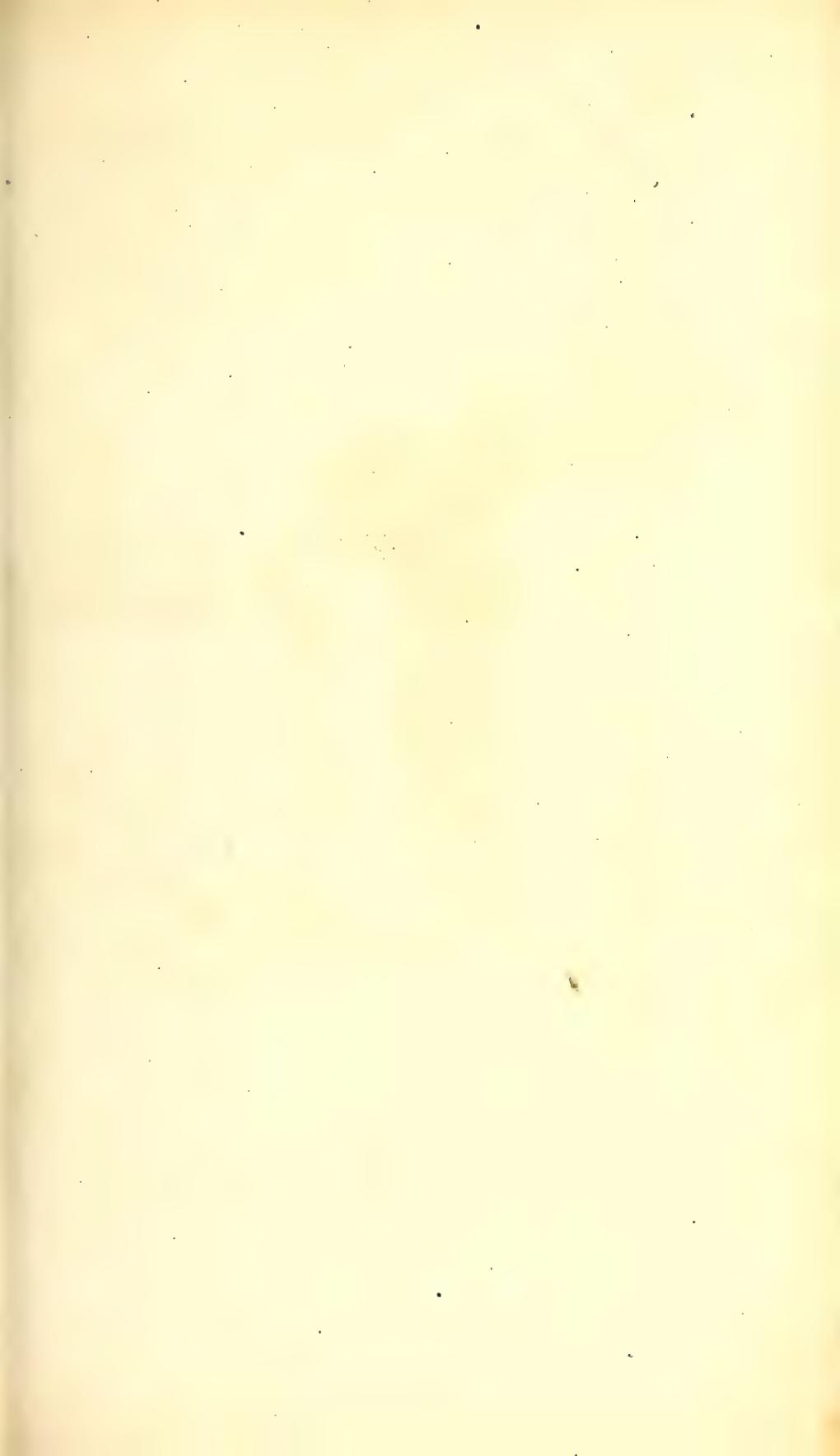
* One brought over to Holland, and described by Mr. Allamand, was about three feet and a half long, from the forehead to the tail; but it grows to a far larger size, being generally equal or superior to a large Stag.

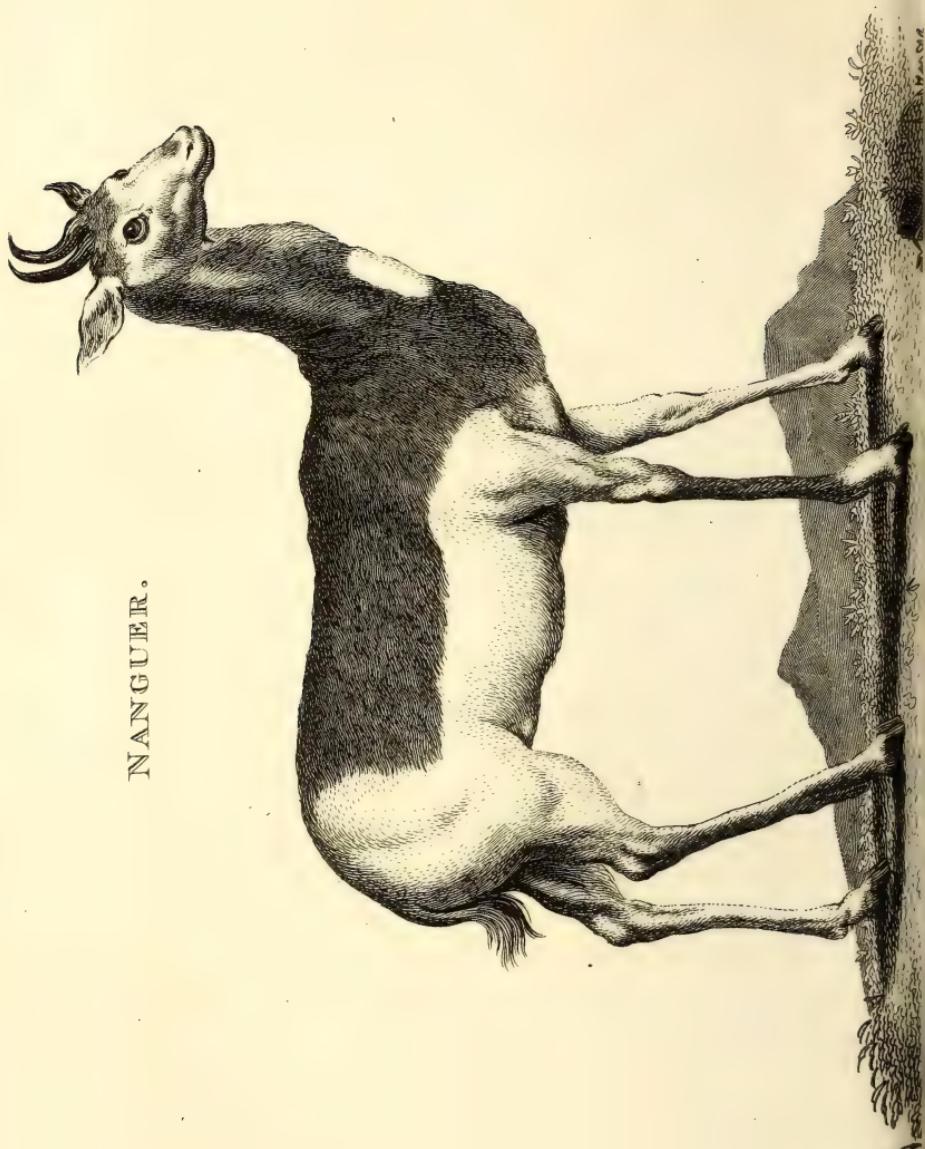
kind of oblong square brush of stiff reversed bristles, while the hairs of the cheeks are disposed downwards: round the eyes grow several very strong white bristles in a radiated manner: the tail somewhat resembles that of a horse, and is full of hair, and of a white colour. The limbs of the Gnou are light and elegant, though the form of the head and body is thick and heavy: it is said to have only one false hoof behind each foot, instead of the usual pair: each foot is marked by a blackish or dusky bar above the hoof. The Gnou, says Mr. Allamand, is a very singular compound of animals; uniting the strong head and horns of the Bull, with the lightness and skin of the Stag, the beauty of the mane, body and tail of the Horse, and the sinus lachrymales* of the Antelope.

The Gnou, says Mr. Pennant, is a fierce and dangerous animal, but is sought after on account of its flesh, which is an excellent kind of venison. It is principally found in the country of the *Nimiquas*, where it lives in large herds. The female is said to be horned like the male, and in the young animals the horns are quite strait.

Of this highly singular species a coloured drawing was sent by the late Lord Bute to the Count de Buffon, under the name of *Fesa Heda*, or *Bos-Buffel*, and another drawing, supposed to be more

* The *sinus lachrymalis*, which in this tribe of animals is peculiarly conspicuous, is that small channel or duct situated at the inferior angle of the eye. In the Antelopes it forms a large extended fissure or furrow on the skin. It is also very large in some of the Deer tribe.





NANGUER.

exact, was communicated by the Viscount Piscolini, which latter is engraved in the sixth supplemental volume. The engraving, however, afterwards published by Mr. Allamand, having been executed with great care from the living animal, is supposed to be more exact than any other, and is therefore introduced into the present publication.

NANGUER.

Antilope Dama. *A. cornibus antrorsum incurvis, corpore albo, dorso fasciaque oculari fulvis.* Lin. Syst. Nat. Gmel. p. 183.

Dama. Plin. Hist. Nat. VIII. c. 53. XI. c. 37.

White Antelope, with fulvous back, and round horns, incurvated forwards.

Le Nanguer, ou Nanguer. Buff. 12. p. 213. pl. 34.

Swift Antelope. Pennant Quadr. 1. p. 85.

THIS is one of the few species of Antelopes supposed to have been known to the ancients. It is a native of Africa, and is believed to be the *Dama* of Pliny. Its colour is rufous or tawny brown above and white below; the rump and hind part of the back, together with the thighs and legs, are also white, and on the fore part of the breast is a large patch of white. It is observed, however, to vary somewhat as to colour in different individuals: the horns are round, black, eight inches long, and bent forwards at their tips. This

species is said to be one of the swiftest of the whole tribe, so as almost to outstrip all pursuit. Its measures are thus given by Mr. Pennant, viz. "Length three feet eight inches : height two feet eight inches." It is said to be easily tamed, and is principally found in Senegal.

RED ANTELOPE.

Antilope Ridunca. *A. cornibus apice antrorsum recurvis, corpore rufescente subhирto.* Lin. Syst. Nat. p. 184.

Red-brown Antelope, with round slightly annulated horns, recurred forwards at the tips.

Le Nagor. Buff. 12. p. 326. pl. 46.

Red Antelope. Pennant Quadr. 1. p. 86.

THE Red Antelope, or Nagor, is much allied to the Nanguer, or Dama. It is about the size of a Roebuck, and its colour on all parts is an uniform reddish brown, palest on the breast and belly : the horns, which are short, black, smooth, and but slightly marked with a few rings at their base, are bent forwards at the tips in the same manner, though not in so great a degree, as those of the Nanguer. A preserved specimen of this animal occurred among the animals brought by Adanson from Senegal, and from it the Count de Buffon gave the slight description, and figure, in his History of Quadrupeds. The measures of Mons. Adanson's specimen were as follows, viz. From nose to tail, nearly four feet : from the base of the

tail to the breast, two feet and a half: height, from the fore feet to the top of the back, two feet three inches: from the hind feet to the top of the back, two feet and a half: thickness or diameter of the belly, ten inches; and its length, from the fore to the hind thighs, one foot three inches: length of head, nine inches; depth, six; width, four and a half: horns, five inches and a half long, and one inch and a half broad; tips, distant six inches: length of ears, five inches: horns, marked at the base by one or two smooth rings: the colour of the whole animal rufous: the hair stiff, glossy, and about an inch long; nor lying very close to the skin.

The Nagor is chiefly found in that part of Senegal nearest the isle of Goree.

CHAMOIS. *Plate 187*

Antilope Rupicapra. *A. cornibus erectis teretibus levigatis, apice retrorsum uncinatis.* Lin. Syst. Nat. Gmel. p. 182.

Brown Antelope, with smooth upright horns, with the tips hooked forwards.

Capra Rupicapra. *C. cornibus erectis uncinatis.* Lin. Syst. Nat. p. 95.

Rupicapra. Plin. Hist. Nat. VIII. c. 35. XI. c. 37. Gesn. 321. fig. p. 319. Aldr. bisulc. p. 725. fig. p. 727. Jonst. p. 74. t. 27. 32.

Le Chamois. Buff. 12. p. 136. 177. pl. 16.

Chamois Antelope. Pennant Quadr. 1. p. 72.

THE Chamois is the only species of Antelope, except the Saiga, that is found in Europe. It is

an inhabitant of the Alps of Switzerland and Italy, the Pyrenæan mountains, the island of Crete, several parts of Greece, and the mountains Caucasus and Taurus. It is about the size of a common Goat, and is of a deep or dusky rufous-brown colour, with the cheeks, chin, throat, and belly, of a yellowish white: in some individuals the cheeks are observed to be of a dusky colour, and the forehead white. The horns are upright, slender, about eight inches high, and strongly hooked backwards at the tips: their colour is black, and they are slightly wrinkled towards the base, but have no appearance of rings or circular elevations, as in most others of this genus. At the base of each horn, at the back part, is said to be a pretty large orifice in the skin, the nature and use of which does not seem to be clearly understood. The hair of the Chamois is rather long: the tail short, like that of a Goat, and of a blackish colour both above and below.

The Chamois is an animal of extremely timid manners, and while the herd is feeding, one always acts as a sentinel, and on every alarm gives notice to the rest by a kind of sharp hiss; upon which the whole herd flies off with the utmost rapidity. They are said to feed chiefly in the very early part of the morning, and in the evening. Their chace is a very laborious employment; since the animals must be approached by surprise, and are shot with rifle-barrelled guns*. In their

* Pennant.

stomachs is often found a species of ægragopila, or hair-ball, covered with a hard incrustation. They are said to be long-lived animals, and to bring two and sometimes three young at a time. The skin of the Chamois is greatly esteemed as a fine kind of leather.

CAPRA. GOAT.

Generic Character.

<i>Cornua concava, sursum versa, erecta, compressa, scabra.</i>	<i>Horns hollow, turning upwards and backwards, compressed, rough, almost close at their base.</i>
<i>Dentes Primores inferiores octo.</i>	<i>Front-teeth in the lower jaw eight.</i>
<i>Laniarii nulli.</i>	<i>Canine-teeth, or Tusks, none.</i>
<i>Mentum barbatum.</i>	<i>Chin bearded in the male.</i>

IBEX.

Copra Ibex. *C. cornibus supra nodosis in dorsum reclinatis, gula barbata.* *Lin. Syst. Nat. p. 95.*

Grey-brown Ibex, whitish beneath, with large knotted horns bending over the back, and bearded throat.

Ibex. *Plin. Hist. Nat. VIII, c. 53.* *Gesn. Quadr. p. 331. and 1099.* *Aldr. bisulc. p. 730. f. p. 732.* *Jonst. Quadr. t. 75. t. 25. 28.* *Raj. Quadr. p. 77.*

Steinbock. *Gesn. Thierb. p. 148.*

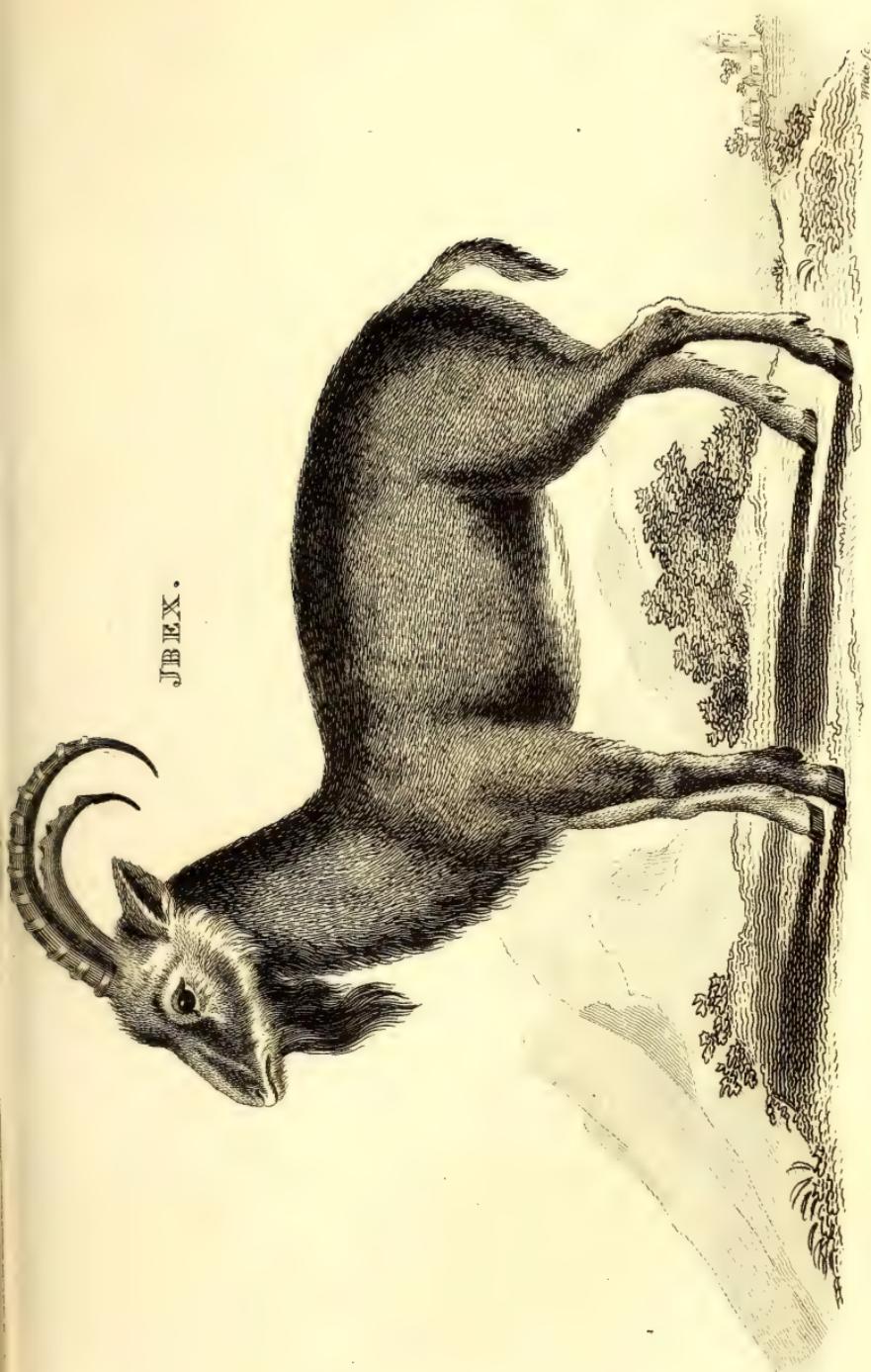
Ibex. Steinbock. *Museum Leverianum. No. 3. p. 105. 107. t. 2.*

Le Boquetin. *Buff. 12. p. 136. pl. 13.*

Ibex Goat. *Pennant Quadr. 1. p. 55.*

THIS, which is the common Ibex or Steinbock of authors, appears to have been sometimes confounded with the Caucasian Ibex, or next species, to which it is much allied. It is allowed both by

J. B. EX.



Wm. C.

MR. PENNANT AND DR. PALLAS that this, as well as the Caucasian Ibex, may have been a stock or original from which the common goat is derived; and in confirmation of this idea we may add, that in the *Journal de Physique*, for the year 1786, it is affirmed, that this animal has bred with the common domestic Goat.

The Ibex is found in several parts of Europe and Asia. It inhabits the *Carpathian* and *Pyrenean* mountains, various parts of the *Alps*, more particularly the *Rhaetian Alps*, in the midst of snow and glacières. In *Asia* it occurs on the summits of the chain of mountains extended from *Taurus*, and continued between eastern *Tartary* and *Siberia**. It also inhabits the tract beyond the *Lena*, and in all probability may be a native of *Kamstchatka*. In *Arabia* it inhabits the province of *Hedsjaes*, and is there known by the name of *Baeden*. Lastly, it is found in the high mountains of the island of *Crete*, where the *Caucasan Ibex* has also been discovered.

It is an animal of great strength and agility, and is considerably larger than a common domestic Goat. Its colour is a deep hoary or greyish brown; much paler or whitish beneath, and on the insides of the limbs; the outsides of which are dusky or blackish on the lower part: the body is of a thick, strong form; the head rather small, the eyes large, the horns extremely large and long, so as sometimes to measure three feet in

* Pennant.

length, and to extend the whole length of the body: they are of a deep brown colour, and are marked on the upper surface with very protuberant transverse knots or half circles: the legs are strong, the hoofs short, as is likewise the tail: on the chin is a brown or dusky beard. The female is smaller than the male, with smaller horns in proportion, and much less boldly or distinctly knotted above.

This is the animal whose blood was formerly considered as a valuable article in the *materia medica*, being celebrated for its supposed power of relieving pleuritic and many other complaints. Of its wonderful virtues in this way much may be found in the works of Gesner and Aldrovandus.

In its general habits or manners the Ibex resembles the common Goat, but possesses every attribute of strength and activity in a degree proportioned to its natural state of wildness. It delights to climb mountains, and hang upon the brink of precipices, and its chace is in consequence considered, like that of the *Chamois*, as in the highest degree difficult and laborious. It is even said, that, when hard pressed, this animal will fling itself down a steep precipice, and falling on its horns, escape unhurt from its pursuers; nor will this appear in the least incredible, if we may rely on the faith of *Monardes*, who assures us that he saw a *Caucasan Ibex* leap from the top of a high tower, and, falling on its horns, immediately spring up on its limbs and leap about without having received the least apparent injury.

The flesh of the young Ibex is said to be in good esteem as an article of food. Its period of gestation is said to be the same as in the common goat, viz. five months.

CAUCASAN IBEX.

Capra Aegagrus. C. cornibus carinatis arcuatis, gula barbata.

*Lin. Syst. Nat. Gmel. p. 193. Pall. Spic. Zool. XI. p. 45. t. 5.
fig. 2, 3. S. G. Gmel. it. 3. p. 493.*

Grey-brown Ibex, white beneath, with large, carinated, slightly wrinkled, bowed horns, and bearded throat.

Chevre sauvage. *Tavernier it. 2. p. 143.*

Steinbock. *Ridinger Jagdh. Th. t. 11.*

Caucasan Ibex. *Pennant Quadr. 1. p. 57.*

THE Caucasan Ibex, which is supposed to be the chief real stock or origin of the domestic goat, is considerably superior to that animal in size, and its form in some degree resembles that of a stag. Its general colour is a brownish or subferruginous grey above, and white beneath; the forehead is nearly black, which colour is continued down the back in the form of a list or stripe: the chin is furnished with a large brownish beard, and the horns, which are very large, and bend considerably backwards, are smooth, black, sharply ridged on their upper part, and hollowed on the exterior side: they have no appearance either of knots or rings, but are merely marked on the upper surface by some obscure undulations, or slight wavy wrinkles: they are about a

yard in length, and are close at the base, about a foot distant at the middle part, and eight or nine inches at the tips. The female is destitute both of horns and beard.

In point of strength and agility this species is at least equal, if not superior, to the common Ibex; it inhabits the loftiest, rocky points of Mount Caucasus, and particularly the parts about the rivers *Kuban* and *Terek*; almost all *Asia minor*, and may probably extend even to *India*. It is said to abound on the hills of *Laar* and *Chorazan*, in *Persia*. Monardes also affirms that it is found in *Africa*, and Mr. Pennant is inclined to believe that it may exist in *Crete*, and even on the *Alps*, grounding his idea on a figure in one of the works of *Ridinger**, which seems intended for the same animal. It has been already observed, under the article of the Common Ibex, that Monardes assures us, he saw a Caucasan Ibex leap from a high tower, and, falling on its horns, spring up without the least injury. In the stomach of this animal, as in some of the Antelopes and other quadrupeds, is occasionally found a Bezoar.

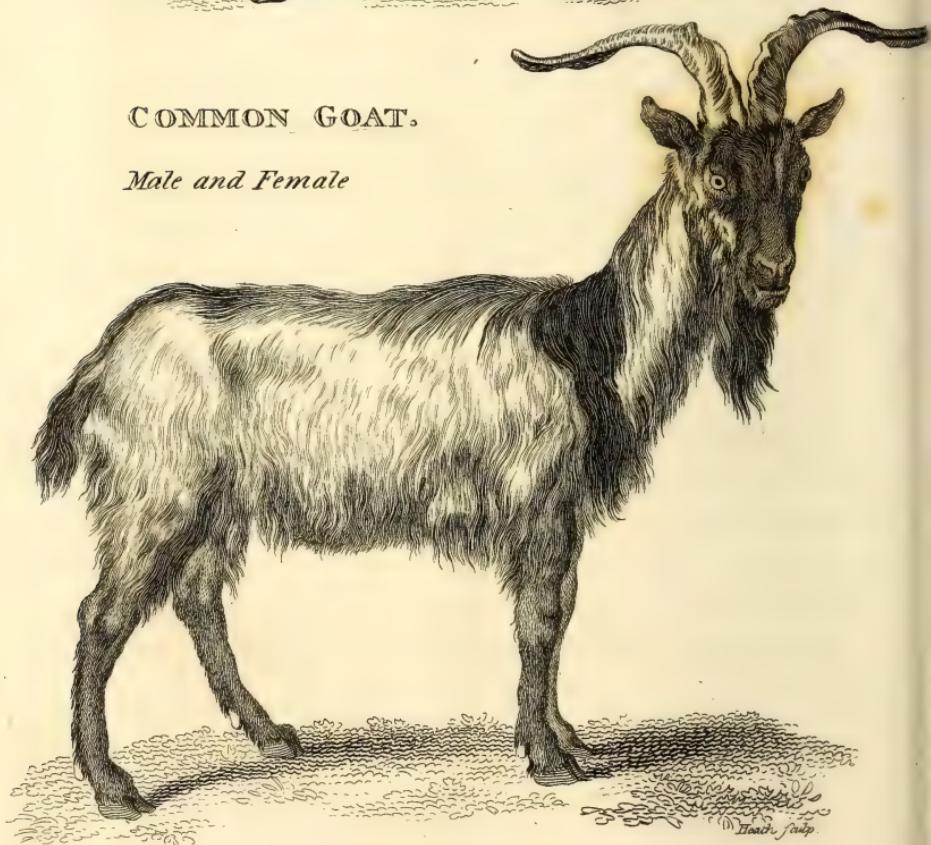
In Dr. Gmelin's edition of the *Systema Naturæ* we find a third species of Ibex, under the title of *Capra Caucasiaca*. Its specific character is thus given, viz. *C. cornibus retrorsum et extrorsum arcuatis, apice denuo introrsum vergentibus, obsolete triquetris, antice nodosis*. This is the kind described by Guldenstedt in the Transactions of the

* *Entwurf einiger thiere*, 71.



COMMON GOAT.

Male and Female



Academy of Petersburgh, and which may be considered as differing so slightly from the preceding as scarce to demand a specific character. It is said to be found in the schistous cliffs of Caucasus, near the origin of the rivers *Terek* and *Cuban*. The horns are much larger than those of the common goat, and are bowed backwards. The colour of the animal is a ferruginous brown above, paler or whitish beneath. It is of the size of a common goat, but of a thicker or stouter form. Upon the whole, I cannot but think that Mr. Pennant has very properly included this in his description of the Caucasian Ibex above detailed.

COMMON GOAT.

Capra Hircus. *C. cornibus carinatis arcuatis, gula barbata.*
Lin. Syst. Nat. p. 94.

Goat with bowed carinated horns, commonly turning outwards towards the ends.

Capra. *Gesn. Quadr. p. 170. 301. f. 302. 304. Aldr. bisulc. p. 619. f. p. 635. Jonst. Quadr. p. 65. t. 26, 27.*

Bouc & Chevre. *Buff. 5. p. 59. pl. 8, 9.*

Domestic Goat. *Pennant Quadr. 1. p. 60.*

THE reader will observe, that on the supposition of the Caucasian Ibex, or *Ægagrus*, being the original or stock from which the common goat has been derived, its Linnæan specific character is, of course, given in the same words.

The Goat, in its domestic state, is found in almost every part of the Globe, bearing the extremes of heat and cold, and differing in size and

form according to various circumstances. It may be observed, that the horns have generally a curvature outwards towards the tips ; and it may be added, that the animal was entirely unknown to the Americans on the discovery of that continent, having been introduced by the Europeans.

" The Goat (says Buffon) is superior to the sheep both in sentiment and dexterity. He approaches man spontaneously, and is easily familiarized. He is sensible of caresses, and capable of a considerable degree of attachment. He is stronger, lighter, more agile, and less timid than the sheep. He is a sprightly, capricious, wandering, wanton animal. It is with much difficulty that he can be confined, and he loves to retire into solitude, and to climb, stand, and even sleep, on rugged and lofty eminences. He is robust and easily nourished, for he eats almost every herb, and is injured by very few. His bodily temperament, which in all animals has a great influence on the natural disposition, is not essentially different from that of the sheep. These two animals, whose internal organization is almost entirely similar, are nourished, grow, and multiply in the same manner ; and their diseases are the same, excepting a few, to which the Goat is not subject. The Goat fears not, like the sheep, too great a degree of heat. He cheerfully exposes himself to the sun, and sleeps under his most ardent rays, without being affected with the vertigo or any other inconveniency. He is not afraid of rain or storms ; but he appears to feel the effects of severe

cold. The inconstancy of his disposition is marked by the irregularity of his actions. He walks, stops short, runs, leaps, approaches or retires, shews or conceals himself, or flies off, as if actuated by mere caprice, and without any other cause than what arises from an eccentric vivacity of temper. The suppleness of his organs, and the strength and nervousness of his frame, are hardly sufficient to support the petulance and rapidity of his natural movements.

“ When pastured along with sheep, Goats always take the lead of the flock. They love to feed separately on the tops of hills, and prefer the most elevated and rugged parts of mountains. They find sufficient nourishment in heathy, barren, and uncultivated grounds. They do infinite mischief when permitted to go among corn, vines, copses, or young plantations; for they eat with avidity the tender bark and young shoots of trees, which generally proves fatal to their growth. They carefully avoid moist ground, marshy meadows, and rich pastures. They are seldom reared in plain countries, where they never thrive, and where their flesh is always bad.”

The Count de Buffon adds, that their milk is more wholesome, and better than that of the Sheep: that it is used as a medicine, curdles easily, and makes very good cheese; that, as it contains only a few oily particles, the cream should never be separated from it, and that the females allow themselves to be suckled by infants,

to whom their milk affords very good nourishment.

After this excellent description of the general manners of the Goat, the Count de Buffon affords a curious example either of philosophical negligence, or of singular credulity; since he gravely observes, that this animal is subject, like the cow! to be sucked by the *Viper*, and still more by the bird called the *Goatsucker!!!* It is astonishing that Mons. Sonnini, in his edition of the Count's Natural History, has not taken care to contradict this absurdity. He has, however, given us a curious instance of the readiness with which the Goat permits itself to be sucked by animals of a different kind, and far larger than itself; since he assures us, that he saw, in the year 1780, a foal, which had lost its mother, thus nourished by a Goat, which, during the process, was placed on a barrel, in order that the foal might suck with greater convenience. The foal followed its nurse to pasture, as it would have done its parent, and was attended with the greatest care by the Goat, which always called it back by her bleatings, when it wandered to any distance from her.

The colour of the domestic Goat is various, being either black, brown, white, or spotted. Mr. Pennant informs us, that those of Wales are commonly white, and are far superior in size, strength, and fineness of hair, to those of other mountainous countries; the Goats of France, and the Alps, being generally short-haired, reddish, and

small-horned ; the horns of the Cambrian Goat, on the contrary, have been seen three feet two inches long, and three feet from tip to tip. The flesh is of great use to the inhabitants of that country, and affords them a cheap and plentiful provision in the winter months, when the kids are brought to market : the haunches are often dried and salted, and used as a substitute for bacon *. The skin of the goat is peculiarly well adapted for the glove manufactory, especially that of the kid ; and as it takes a dye better than any other skin, it was formerly much used for hangings in the houses of people of fortune ; being susceptible of the richest colours, and when flowered and ornamented with gold and silver, became an elegant and superb furniture.

The smell of the Goat is proverbially unpleasing. During the months of September and October the whole atmosphere around them is, according to Mr. Pennant, filled with the ungrateful odor, which, though as strong as *asafætida* itself, may perhaps be conducive to the prevention of many distempers, and to cure nervous and hysterical ones †. Horses are supposed to be much refreshed with it ; on which account many persons keep a he-goat in their studs or stables. The Goat goes with young four months and a half, and brings forth from the latter end of February to the latter end of April ; having only two young, or sometimes three.

* Penn. Brit. Zool.

† Brit. Zool.

The following are the most remarkable varieties of the domestic Goat.

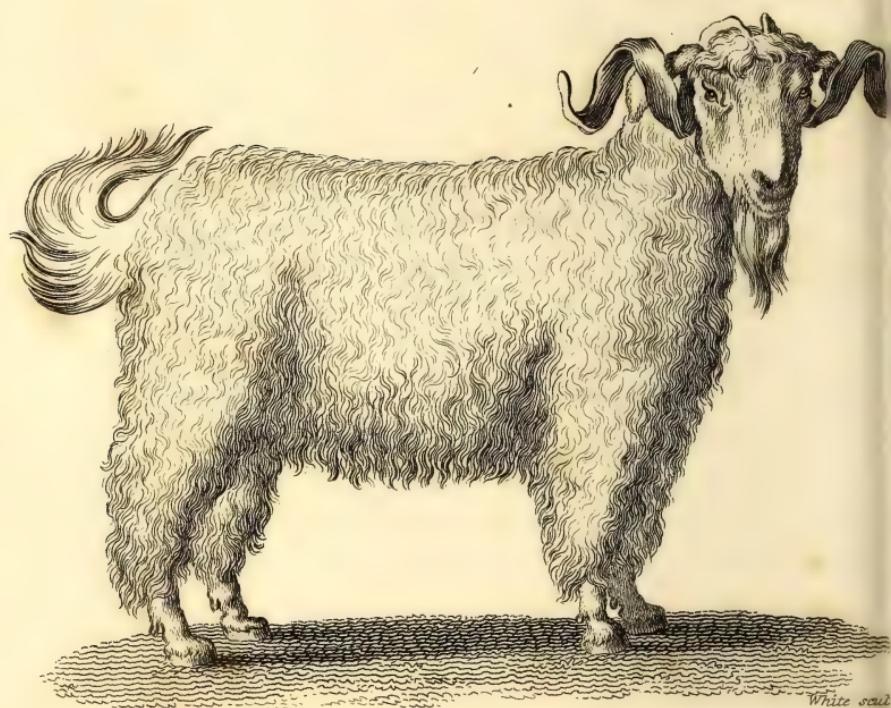
SYRIAN GOAT.

Capra Mambrica. *C. cornibus reclinatis, auribus pendulis, gula barbata.* Lin. Syst. Nat. p. 95.

Goat with pendulous ears, and horns reclined backwards.

Syrian Goat. Pennant Quadr. 1. p. 63.

THIS variety is common in many parts of the East, and is distinguished by the great length of the ears, which are pendulous, like those of a hound, and sometimes reach so low as to be troublesome to the animal while feeding; for which reason it is the custom to crop them, or to cut off one, that the animal may feed with greater convenience. This, however, is denied by Mons. Sonnini, who assures us that the ears of this Goat never reach so low as the ground, and are never cut off. Its general colour is a reddish brown, and the horns are short and black. This is the common Goat of Aleppo, the inhabitants of which it supplies with milk. The same is the case at Cairo, where these Goats are driven in small flocks, every morning, through the different quarters of the city, and every one sees taken from them the quantity of milk that he wants.



ANGORA GOAT.

ANGORA GOAT.

Capra Angorensis. *C. pilis longissimis crispis toto corpore vestita.* Lin. Syst. Nat. Gmel. p. 194. Briss. Regn. Anim. p. 64. n. 2. Hasselq. it. 206.

Goat with very long, pendent, spirally curled hair.

THIS is by far the most elegant of all the varieties of the Goat, and is a native of *Angora*, a small district in Asia Minor, not far from Smyrna, and remarkable for producing a peculiar race of Goats, Sheep, Cats, Rabbets, &c. with hair of uncommon length and fineness.

The Goat of Angora is generally of a beautiful milk-white colour, short legged, with black, spreading, spirally twisted horns, and with the hair on the whole body disposed in long pendent spiral ringlets: the ears are pendulous, and the horns of the female, instead of divercating, as in the male, turn backwards, and are much shorter in proportion. It is from the hair of this animal that the finest camlets, &c. are prepared. In order to preserve this beautiful hair in good condition, the goatherds of Angora are peculiarly careful of their flocks, washing and combing them with the greatest diligence; and it is said that a change of pasture frequently makes them lose their beauty, this variety being naturally confined to narrow bounds, and produced only in the tract surrounding the towns of Angora and Beibazar.

AFRICAN GOAT.

Capra Depressa. C. cornibus depressis minimis cranio incumbentibus. Lin. Syst. Nat. p. 95.

Goat with very small depressed horns, closely incumbent on the head.

Le Bouc d'Afrique. Buff. 13. p. 154. pl. 18, 19.

African Goat. *Pennant Quadr. 1. p. 63.*

THIS is a very small or dwarf variety, found in some parts of Africa: it has rough hair, and extremely short horns, very thick, triangular, and lying close to the head: in the female they are still shorter, and the hair on the body is smooth. Linnæus seems to have entertained an erroneous idea relative to the native country of this variety, and to have supposed it an American animal.

WHIDAW GOAT.

Capra Reversa. C. cornibus erectis apice recurvis. Lin. Syst. Nat. p. 95.

Goat with upright horns, recurved at the tips.

Bouc & Chevre de Juda. Buff. 12. p. 154. 186. pl. 20, 21.

Whidaw Goat. *Pennant Quadr. 1. p. 63.*

THIS is also a dwarf variety, found in Africa, and is principally distinguished by having short smooth horns, turning a little forwards at the tips. It is said to be very common in Guinea, Angola, and some other parts of Africa, where its flesh is considered as an excellent food.

LONG-HORNED WHIDAW GOAT.

Bouc de Juda. *Buff. Suppl.* 3. p. 96. pl. 13.

IN this variety, which Buffon seems to consider as the same with the preceding, the horns are rather depressed than upright, much longer, and bending somewhat outwards and upwards in an elegant manner at the tips: the hair is long and silky, and the whole animal bears some resemblance to a small Angora Goat. Buffon describes it as considerably larger than the former, measuring two feet nine inches in length; while the other was only twenty-four inches long. This variety is represented in the present work, and seems to be the kind mentioned by M. Sonnini, in his Travels, as common in some parts of Egypt, and which he says has long, thick, soft, and silky hair, and slender handsomely-turned horns.

CAPRICORN GOAT.

Capra Capricornus. C. cornibus brevibus apice antrorsum versis, ad latera annulatis. Lin. Syst. Nat. Gmel. p. 195.

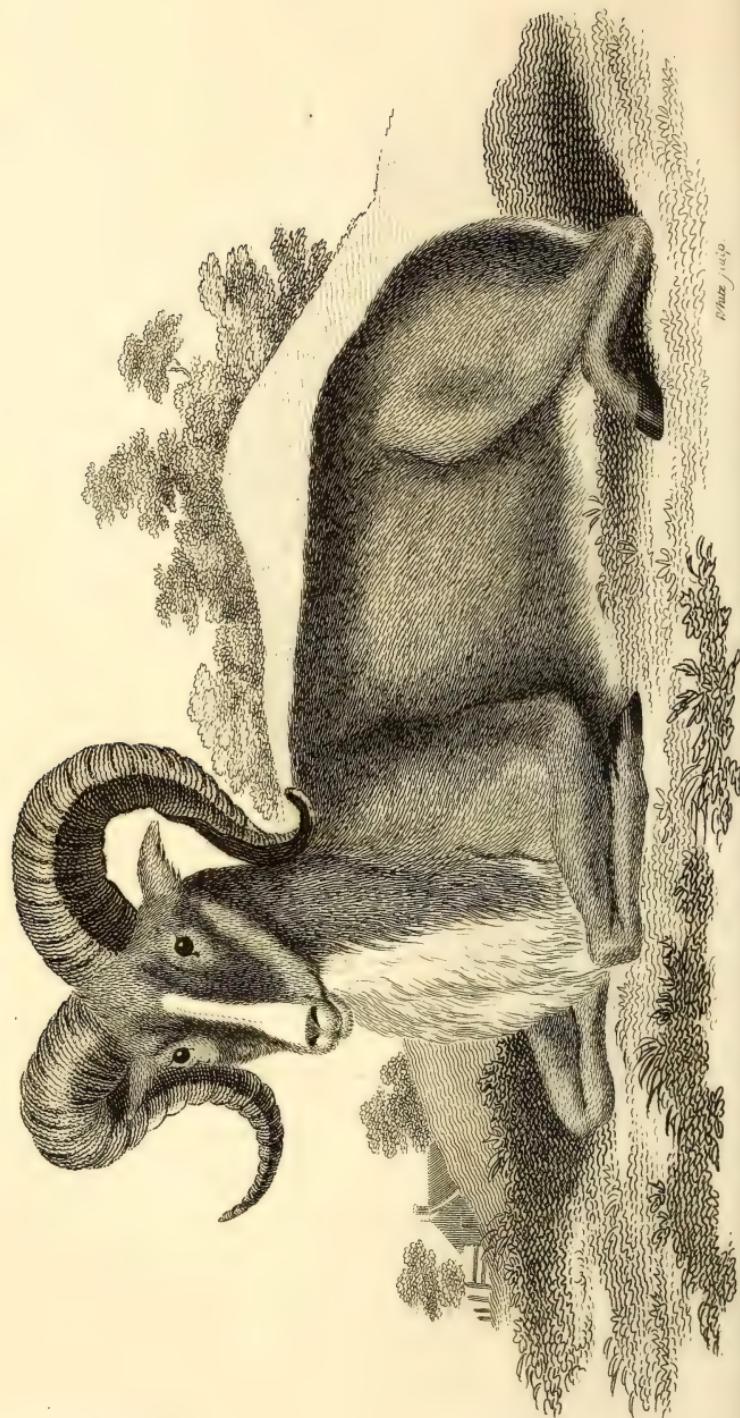
Goat with short horns turning forwards at the tips, and annulated on the sides.

Le Capricorne. *Buff. 12. p. 146. pl. 15.*

THIS variety, which is described by Buffon, from a skeleton with the horns, preserved in the royal cabinet at Paris, is supposed to be a native of Africa. In the form and proportion of the bones, he tells us it has a perfect resemblance to

the domestic he-goat ; and the figure of the under jaw is the same with that of the Wild Goat : but that it differs from both in the horns ; those of the Wild Goat having prominent tubercles or knobs, and two longitudinal ridges, between which there is a well marked anterior face : those of the common Goat have but one ridge, and no tubercles. The horns of the Capricorne have but one ridge, and no anterior face ; and though they want the tubercles, they have rugosities, which are larger than those of a he-goat. These differences, adds Buffon, seem to indicate an intermediate race between the wild and domestic goat ; and, besides, the horns of the Capricorne are short and crooked at the point, like those of the Chamois ; and at the same time are compressed and ringed : hence they partake at once of the he-goat, the Wild Goat, and the Chamois.

AIR GALLI.



OVIS. SHEEP.

Generic Character.

<i>Cornua concava, retrorsum</i>	<i>Horns hollow, wrinkled, turning backwards, and spirally intorted.</i>
<i>Dentes Primores inferiores octo.</i>	<i>Front-teeth eight in the lower jaw.</i>
<i>Laniarii nulli.</i>	<i>Canine-teeth none.</i>

ARGALI.

Ovis Ammon. *O. cornibus arcuatis semicircularibus subtus planiusculis, palearibus laxis pilosis.* Lin. Syst. Nat. Gmel. p. 200.
Sheep with arcuated semicircular horns, flat beneath, and loose hairy dewlaps.

Capra Ammon. *C. cornibus arcuatis semicircularibus subtus planiusculis, palearibus laxis pilosis, gula imberbi.* Lin. Syst. Nat. p. 97.

Le Mouflon. Buff. II. p. 352. pl. 29.

Wild Sheep. Pennant Quadr. I. p. 44.

Ovis fera Sibirica, vulgo Argali dicta. Pall. Spic. Zool. II. p. 3. t. 1, 2.

AS the Capra Ægagrus, or Caucasan Ibex, is supposed to be the original of the domestic Goat, so the Ovis Ammon, Argali, or Musimon, is believed to be the chief primæval stock from which

all the kinds of domestic Sheep have proceeded ; many of which differ full as widely both from each other and their archetype as the Goats.

The Argali, or Wild Sheep, is an inhabitant of rocky or mountainous regions, and is chiefly found in the Alpine parts of Asia. It was observed by Dr. Pallas throughout the vast chain of mountains extending through the middle of that continent to the Eastern Sea. In Kamtschatka it is plentiful : it occurs also in Barbary, in the mountains of Greece, and in the islands of Corsica and Sardinia ; differing merely in a few slight particulars of colour and size, according to its climate.

The general size of the Argali is that of a small Fallow Deer. Its colour is a greyish ferruginous brown above, and whitish beneath : the face is also whitish, and behind each shoulder is often observed a dusky spot or patch : the legs, at least in the European kind, are commonly white : the head strongly resembles that of a Ram ; but the ears are smaller in proportion : the neck more slender ; the body large ; the limbs slender, but strong ; the tail very short, being hardly more than three inches in length : the horns, in the full-grown or old animals, are extremely large, placed on the top of the head, and stand close at their base, rising first upwards, and then bending down, and twisting outwards, as in the common Ram : the body is covered with hair instead of wool ; in which particular consists its chief difference from the general aspect of a Sheep ; but in

winter the face, and particularly the part about the tip of the nose, becomes more white, the back of a more ferruginous cast, and the hair, which in summer is close, like that of a deer, becomes somewhat rough, wavy, and a little curled ; consisting of a kind of wool intermixed with hair, and concealing at its roots a fine white woolly down : the hair about the neck and shoulders, as well as under the throat, is considerably longer than on other parts. The female is inferior in size to the male, and has smaller and less curved horns.

In Siberia the Argali is chiefly seen on the tops of the highest mountains exposed to the sun, and free from woods. The animals generally go in small flocks : they produce their young in the middle of March, and have one, and sometimes two, at a birth. The young, when first born, are covered with a soft, grey, curling fleece, which gradually changes into hair towards the end of summer.

From spring to autumn the Argalis feed in the little vallies among the upper regions of the mountains, on the young shoots of the Alpine plants, and are said to grow very fat. As winter approaches, they descend lower and eat grass and other vegetables. They are fond of frequenting spots of a saline nature, and will excavate the ground in such places, in order to get at the salt.

The horns of the old males grow to a vast size, and have been found of the length of two Russian yards, measured along the spires ; weighing fif-

teen pounds each. We are assured by Father Rubruquis, a traveller in the thirteenth century, that he had seen some of the horns so large that he could hardly lift a pair with one hand, and that the Tartars made great drinking-cups of them. A more modern traveller has asserted, that young foxes occasionally shelter themselves in such as are here and there found in the deserts.

The Argali is a very timid animal, and when closely pursued, does not run in a directly progressive course, but obliquely, from side to side, in the manner of other sheep, ascending the rocky mountains with great agility, and, like the wild goat, going over the narrowest and most dangerous passes with perfect safety. The males are said to fight frequently among themselves, and will sometimes precipitate each other down the rocks in their contests. Their chace is dangerous and difficult, but is an important object with some of the Asiatics, since the animal furnishes a great number of necessary articles ; the skin being used for cloathing, and the flesh for food. Dr. Pallas informs us, that the flesh of the lamb is excellent ; that of the old animals good ; but more particularly when roasted.

In Corsica the Argali is known by the name of *Mufro* ; where it is so wild as to be rarely taken alive, but is shot by the hunters, who lie in wait for it among the mountains. When the young are taken, however, which is sometimes the case when the parent is shot, they are observed to be very readily tamed. The Corsican Argali or



BEARDED SHEEP.

Mouflon of Buffon, is of a darker colour than the Asiatic kind.

From the above description it will sufficiently appear that the Wild Sheep is by no means that seemingly helpless animal which we view in a state of confinement and artificial life ; but in the highest degree active and vigorous. It is supposed to live about fourteen years.

It is remarkable that Linnæus, in the twelfth edition of the *Systema Naturæ*, places this animal in the genus *Capra* instead of *Ovis*; appearing rather to consider it as the parent of the Goat than the Sheep. In fact, these two genera are so closely allied, that the line of separation is not very easily discoverable. The present animal, however, whether we consider its figure or manners, seems rather to be the parent or stock of the Sheep than the Goat race.

V A R. ?

Bearded Sheep. *Pennant Quadr.* 1. p. 52. pl. 9.

Tragelaphus seu Hirco-Cervus. *Caii. opusc.* 59.

Siberian Goat. *Pennant Synops. Quadr.* p. 18.

THIS animal seems rather a variety of the Argali than truly distinct. Its description and character is thus given by Mr. Pennant, who in his Synopsis of Quadrupeds referred to the genus *Capra*.

“ Sheep with the hair on the lower part of the cheeks and upper jaws extremely long, forming a

divided or double beard ; with hairs on the sides and body short : on the top of the neck longer, and a little erect. The whole under part of the neck and shoulders covered with coarse hairs, not less than fourteen inches long. Beneath the hairs, on every part, was a short genuine wool, the rudiments of a fleecy cloathing : the colour of the breast, neck, back, and sides, a pale ferruginous. Tail very short. Horns close at their base, recurvated ; twenty-five inches long ; eleven in circumference in the thickest place ; diverging, and bending outwards ; their points being nineteen inches distant from each other."

Mr. Pennant observes, that the learned Dr. Kay, or Caius, gives a good description of this animal, from a specimen brought into England from Barbary, in the year 1561. Dr. Kay named it *Tragelaphus*, on a supposition of its being the same with the *Tragelaphus* of Pliny. The figure published by Mr. Pennant, and which is here repeated, is from a very fine print, by *Basan*, taken from a painting by *Oudry*, of the living animal in the French king's menagery.

COMMON SHEEP.

Ovis Aries. O. cornibus compressis lunatis. Lin. Syst. Nat. p. 97.
Sheep with compressed lunate horns.

Ovis domestica. Raj. Quadr. p. 73.

Pecus, Aries, Ovis, Vervex, Agnus. Plin. Hist. Nat. VIII. c. 47, 48. Gesn. Quadr. p. 872. 912. 925. 927. Aldr. bisulc. p. 370. Jonst. Quadr. p. 54. t. 22.
Brebis & Belier. Buff. 5. p. 1. pl. 1, 2.
Common Sheep. Pennant Quadr. 1. p. 37.

THIS animal is so generally known, that a particular description of its form and manners becomes unnecessary. Its most prominent characters are, that the horns twist spirally outwards; that the tail is round and short; and that the body is covered with wool: but these are characters which are so greatly varied in the different races, that it is hardly possible to fix on an absolute distinctive mark which shall apply to all the varieties.

The domestic Sheep, in its most valuable or woolly state, exists hardly anywhere in perfection except in Europe, and some of the temperate parts of Asia. When transported into very warm climates, it loses its peculiar covering, and appears coated with hair, having only a short wool next the skin. In very cold climates also the exterior part of the wool is observed to be hard and coarse, though the interior is more soft and fine. In England, and some other European regions, the wool acquires a peculiar length and fineness, and is best adapted to the various pur-

poses of commerce. That of Spain is still finer, but less proper for using alone; and is mixed with the English for the superior kinds of cloth. "England," says Mr. Pennant, "once the envy of Europe, for its vast commerce in the productions of this creature, now begins to be rivalled by others, through the neglect, the luxury, and the too great avidity of our manufacturers." Of the English Sheep, those bred in Lincolnshire and the northern counties are most remarkable for their size, and the quantity of wool which they bear. In other parts of England they are generally smaller; and in some parts of Wales and Scotland are very small. It would be superfluous in a work of this nature, to dwell much on the history and character of the domestic Sheep. It is proverbially a timid, simple, and harmless animal: yet, as is well observed by Mr. Smellie, in his edition of Buffon, "Though the talents of the Sheep are not so brilliant as those of other quadrupeds, yet he appears not to be that stupid, defenceless creature painted by the French naturalist."

"Sheep," says Mr. Smellie, "when enslaved by man, tremble at the voice of the shepherd or his dog; but on those extensive mountains where they are allowed to range almost without controul, and where they seldom depend on the aid of the shepherd, they assume a very different mode of behaviour. In these situations, a Ram or a Wedder will boldly attack a single dog, and often come off victorious; but when the danger is more alarming, they have recourse to the collected

strength of the whole flock. On such occasions they draw up into a complete body, placing the young and the females in the centre, while the males take the foremost ranks, keeping close by each other. Thus an armed front is presented on all quarters, and cannot easily be attacked without danger of destruction to the assailant. In this manner they wait with firmness the approach of the enemy; nor does their courage fail them in the moment of attack; for when the aggressor advances within a few yards of the line, the Rams dart upon them with such impetuosity as to lay him dead at their feet, unless he save himself by timely flight. Against the attacks of single dogs or foxes, when in this situation, they are perfectly secure. A Ram, regardless of danger, will often engage a Bull; and his forehead being much harder than that of any other animal, he seldom fails to conquer; for the Bull by lowering his head, receives the stroke of the Ram between his eyes, which usually brings him to the ground."

Of all the domestic animals, none is so subject to various disorders as the Sheep. Of these one of the most extraordinary, as well as the most fatal*, is owing to vast numbers of worms of the genus *Fasciola*, which are found in the liver and gall-bladder. They are of a flat form, of an oval shape, with slightly pointed extremities, and bear a general resemblance to the seeds of a gourd.

to be cured by salt.
* The Rot.

The principal varieties of the Sheep are the following :

CRETAN SHEEP.

Ovis Strepsiceros. *O. rectis carinatis flexuoso-spiralibus.* *Lin.*
Syst. Nat. p. 98.

Sheep with upright, carinated, spirally contorted horns.

Strepsiceros. *Plin. Hist. Nat.* 11. c. 37.

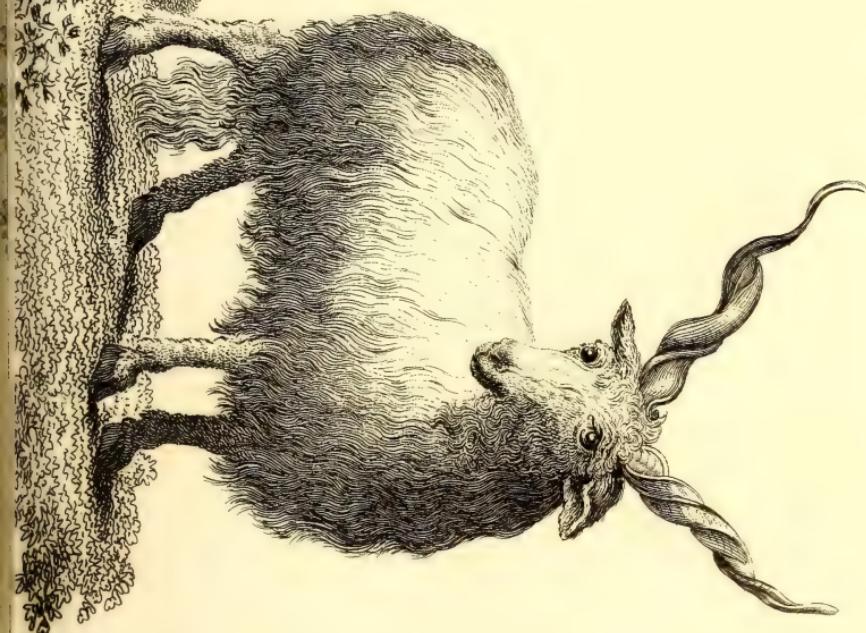
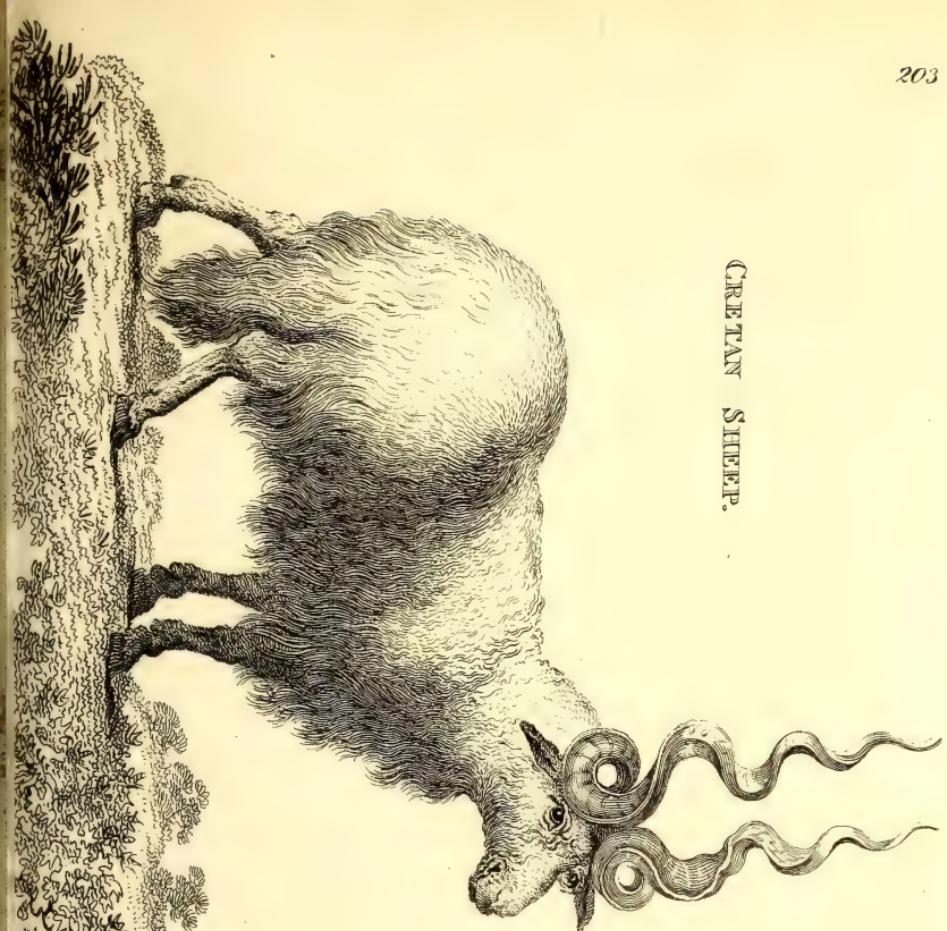
THIS variety is principally found in the island of Crete, and is kept in several parts of Europe for the singularity of its appearance ; the horns being very large, long, and twisted in the manner of a screw : those of the male are upright ; those of the female at right angles to the head. This animal is ranked as a distinct species in the *Systema Naturæ*.

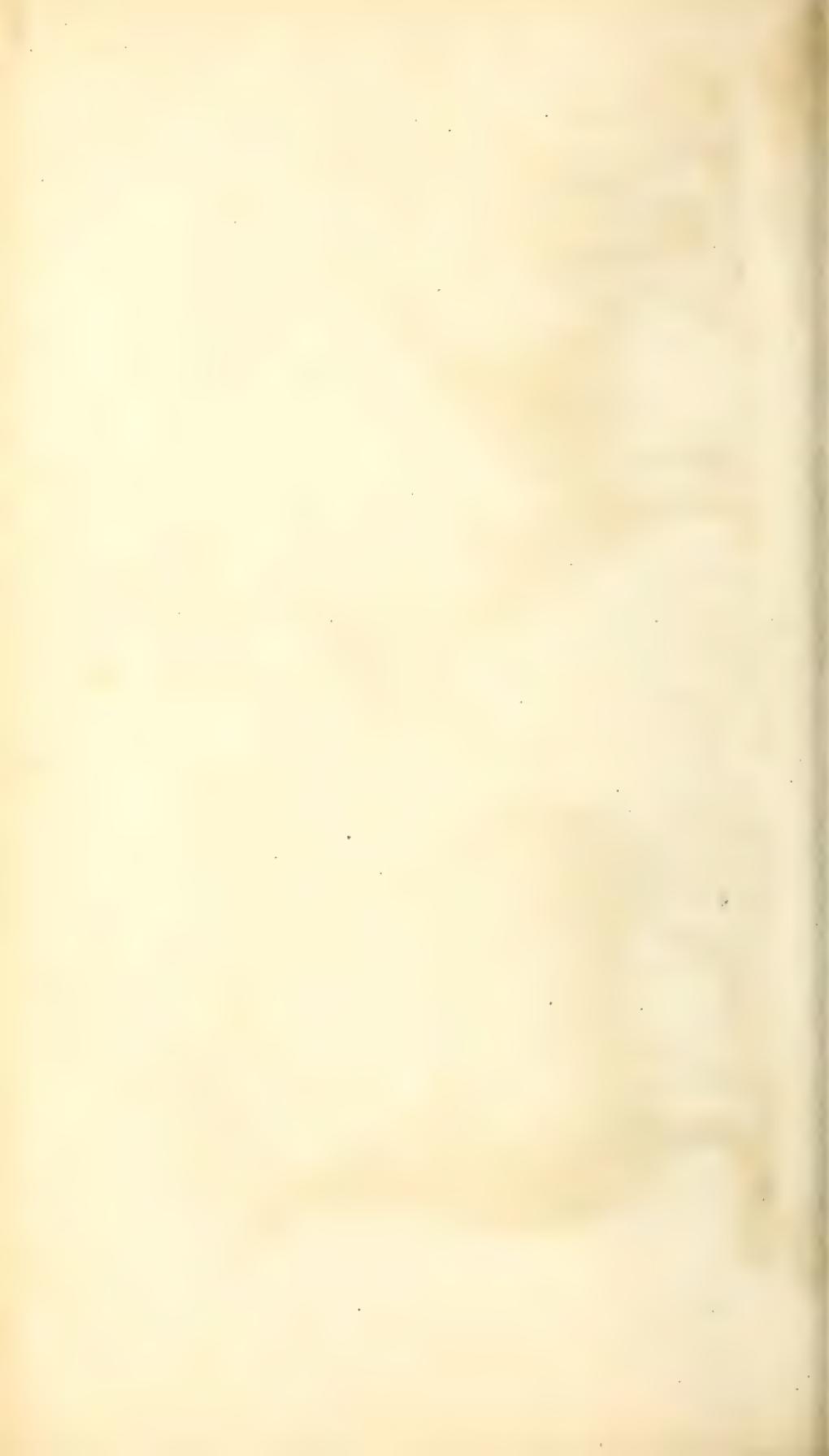
MANY-HORNED SHEEP.

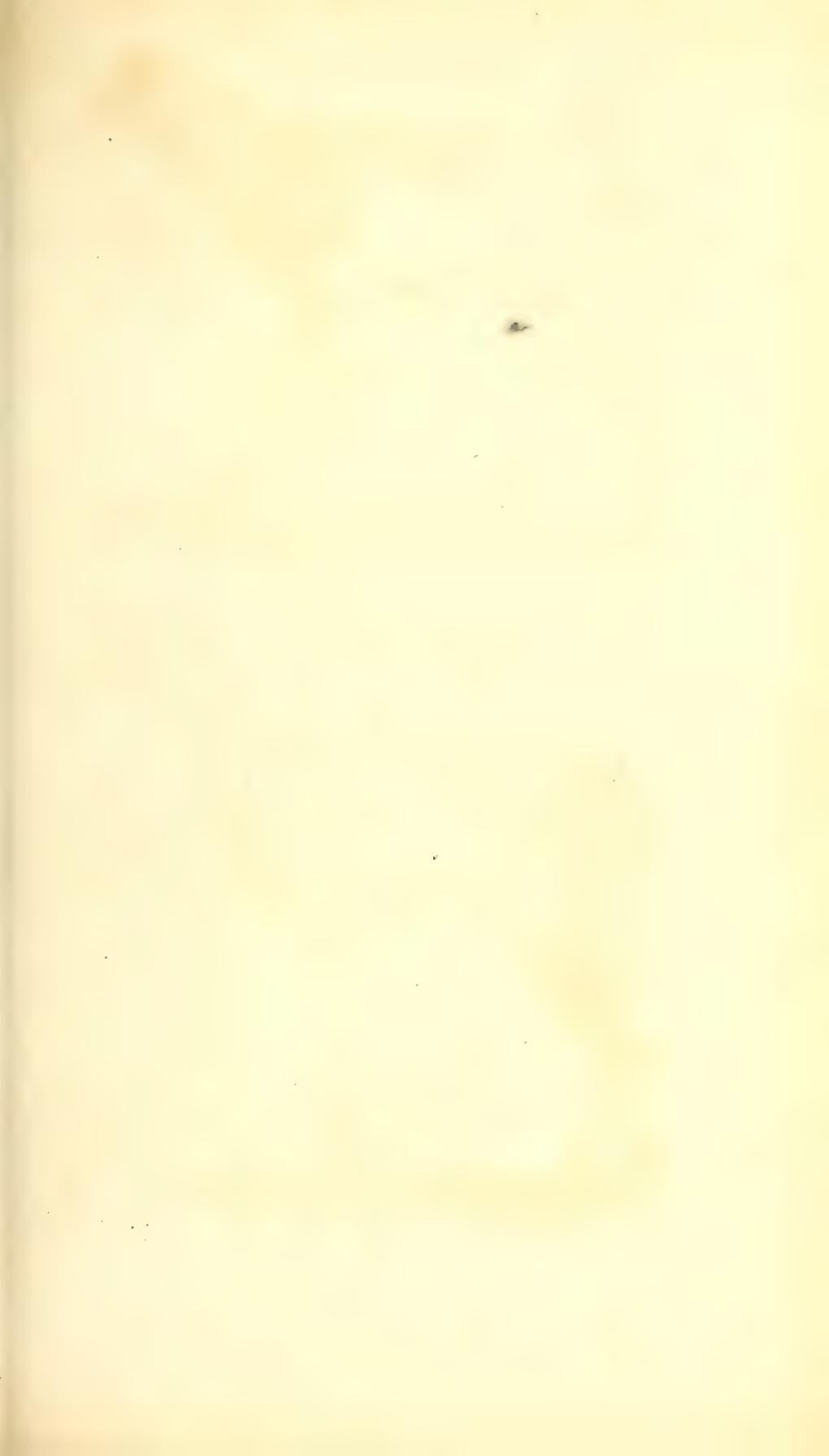
Ovis Polycerata. *Lin. Syst. Nat.* p. 97.

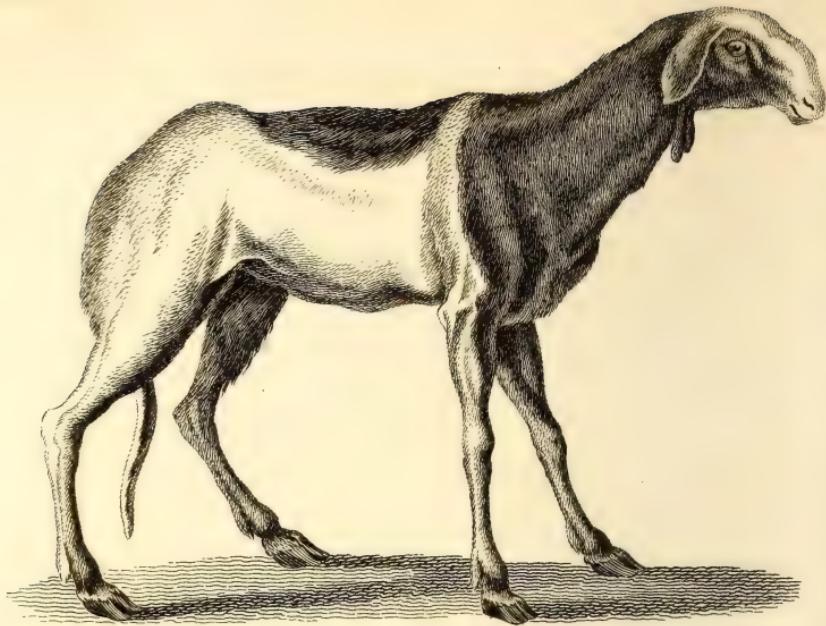
THIS occurs in the northern parts of Europe more frequently than in other regions, and is said to be most common in Iceland. The horns are either three, four, or five in number ; sometimes placed with great regularity, and sometimes differing in proportion and situation. A four-horned variety, with very long hairs hanging from the breast, is also found in some parts of Europe : the two largest horns, in this kind, are strait, and nearly upright on the top of the forehead, while

GRETAN SHEEP.

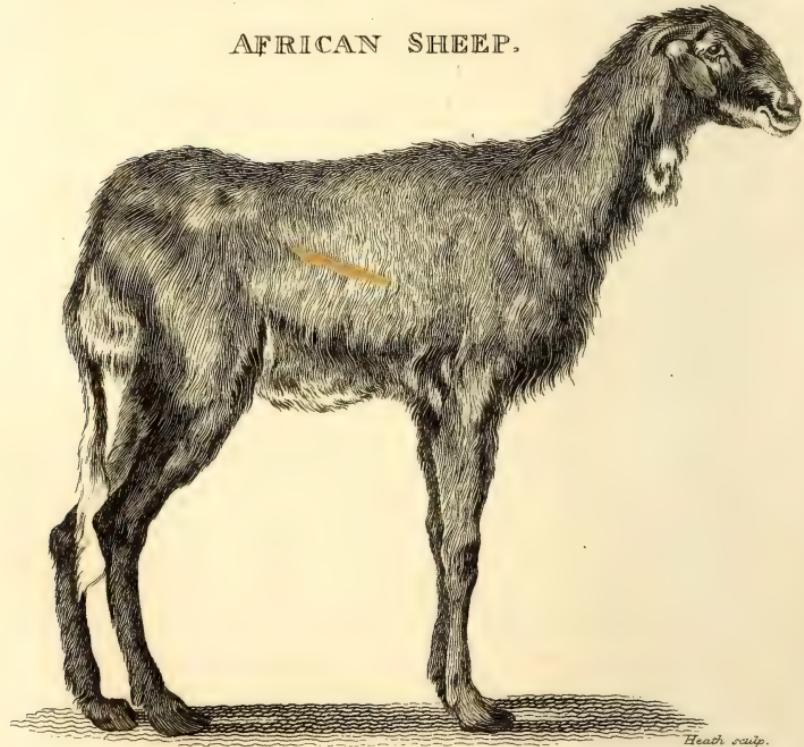








AFRICAN SHEEP.



the smaller pair are seated on each side the head, and turn downwards.

AFRICAN SHEEP

Övis Guineensis. O. auribus pendulis, palearibus laxis pilosis, occipite prominente. Lin. Syst. Nat. p. 92.

THIS, which is sometimes termed the Cape Sheep, and which is erroneously mentioned in Buffon's Natural History as of Indian extraction, is supposed to be most frequent in Guinea, and is distinguished from others by its remarkably meagre appearance, length of neck and limbs, pendent ears, and long arched or curved visage. It is covered rather with hair than wool, and has a pair of pendent hairy wattles beneath the neck, as in goats. The horns are small, and the tail long and lank. This variety is also considered as a distinct species in the twelfth edition of the *Systema Naturæ*.

BROAD-TAILED SHEEP.

Ovis laticaudata. Lin. Syst. Nat. p. 97.

THIS extraordinary and awkward variety occurs in Syria, Barbary, and Ethiopia. It is also found in Tartary, Tibet, &c. Its general appearance, as to other parts of the body, scarce differs from that of the European Sheep, and in Tibet it is remarkable for the exquisite fineness of its

wool. The tails of these Sheep sometimes grow so large, long, and heavy, as to weigh, according to some reports, from fifteen to fifty pounds, and in order to enable the animal to graze with convenience, the shepherds are often obliged to put a board, furnished with small wheels, under the tail. This part of the Sheep is of a substance resembling marrow, and is considered as a great delicacy. Mr. Pennant has remarked, that both the broad and long-tailed varieties of this kind of Sheep were known to the ancients ; being mentioned by Aristotle and Pliny ; the former mentioning the first, and the latter the second sort. One says the tails were a cubit broad, the other a cubit long.

There are many intermediate races of these sheep ; and some have the tails ending in a point ; others rather square, or rounded.

FAT-RUMPED SHEEP.

Ovis Steatopyga.

Cape Sheep. *Pennant Quadr.* 1. p. 42.

THIS variety is furnished with long, coarse, hairy wool ; has longish legs, a somewhat arched visage, horns in the male, like those of the common sheep, and large pendent ears. The tail is sometimes so enveloped in fat as to be scarcely visible, the parts on each side swelling out into a pair of naked hemispheres, of such a size as sometimes to weigh nearly forty pounds : their substance is said to resemble suet. These Sheep

are found in many of the Tartarian deserts, from the *Volga* to the *Irtis* and the Altaic chain of mountains. They exhibit more or less of the appearance just described, according to the nature of their pasture, but are observed to flourish most in such as are of a saline nature.

SPANISH SHEEP.

THE principal distinction of the Spanish Sheep is the fineness of the fleece, and the horizontally extended spire of the horns, which, of course, appear wider than in other sheep.

HORNLESS SHEEP.

Ovis Anglica. *Lin. Syst. Nat. p. 97.*

BREEDS of Hornless Sheep are raised in many parts of England and some other parts of Europe.

Other varieties of Sheep might be mentioned, but it would be tedious, as well as useless, to particularize the slighter variations which occasionally take place in an animal so much affected by climate and manner of life.

PUDU.

Ovis Pudu. O. cornibus teretibus lævibus divergentibus., Lin.
Syst. Nat. Gmel. p. 201.

Capra (Pudu) cornibus teretibus lævibus divergentibus, gula imberbi. Molina Chil. p. 273.

Sheep with smooth round diverging horns, and beardless throat.
Pudu Goat. Pennant Quadr. 1. p. 64.

THIS is a newly discovered species, having been first described by Molina, in his Natural History of Chili. He informs us that it is a native of the Andes ; that it is of a brown colour ; about the size of a kid of half a year old ; with very much the appearance of a goat, but with small smooth horns, bending outwards, and without any appearance of beard. It is of a gregarious nature, and when the snow falls on the upper parts of the mountains, descends into the vallies in large herds, to feed in the plains of Chili, at which time it is easily taken, and readily tamed. The female is without horns,



BOS. OX.

Generic Character.

<i>Cornua concava, antrorsum inversa, lunata, lævia.</i>	<i>Horns concave, turned outwards, lunate, smooth.</i>
<i>Dentes Primores inferiores octo.</i>	<i>Front-teeth eight in the lower jaw.</i>
<i>Laniarii nulli.</i>	<i>Canine-teeth none.</i>

BISON.

Bos Taurus. B. cornibus teretibus, extrorsum curvatis, palearibus laxis. Lin. Syst. Nat. p. 98.

Ox with round horns curving outwards, and loose dewlap.

Bos ferus. Plin. Hist. Nat. VIII. c. 15.

Urus. Cæs. Gall. 6. c. 28. Gesn. Quadr. p. 157. Aldr. bisulc. p. 347. fig. p. 348.

Auerochs. Gesn. Thierb. p. 299.

Bonasus. Plin. Hist. Nat. 8. c. 15. Gesn. Quadr. p. 145. Aldr. bisulc. 358.

Bison. Plin. Hist. Nat. 8. c. 15. Gesn. Quadr. p. 143. Aldr. bisulc. 353.

Bos Bonasus. Lin. Syst. Nat. p. 99.

Bis Bison. Lin. Syst. Nat. p. 99.

The Wild Bull, Bison, or Bonasus.

THIS formidable animal, from which the several races of common cattle have been gradually derived, is found wild in many parts both of the

old and new continent ; inhabiting woody regions, and arriving at a size far larger than that of the domestic or cultivated animal. In this its native state of wildness, the Bison is distinguished, not only by his size, but by the superior depth and shagginess of his hair, which about the head, neck, and shoulders, is sometimes of such a length as almost to touch the ground : his horns are rather short, sharp-pointed, extremely strong, and stand distant from each other at their bases, like those of the common Bull. His colour is sometimes a dark blackish brown, and sometimes rufous brown : his eyes large and fierce ; his limbs extremely strong, and his whole aspect in the highest degréé savage and gloomy.

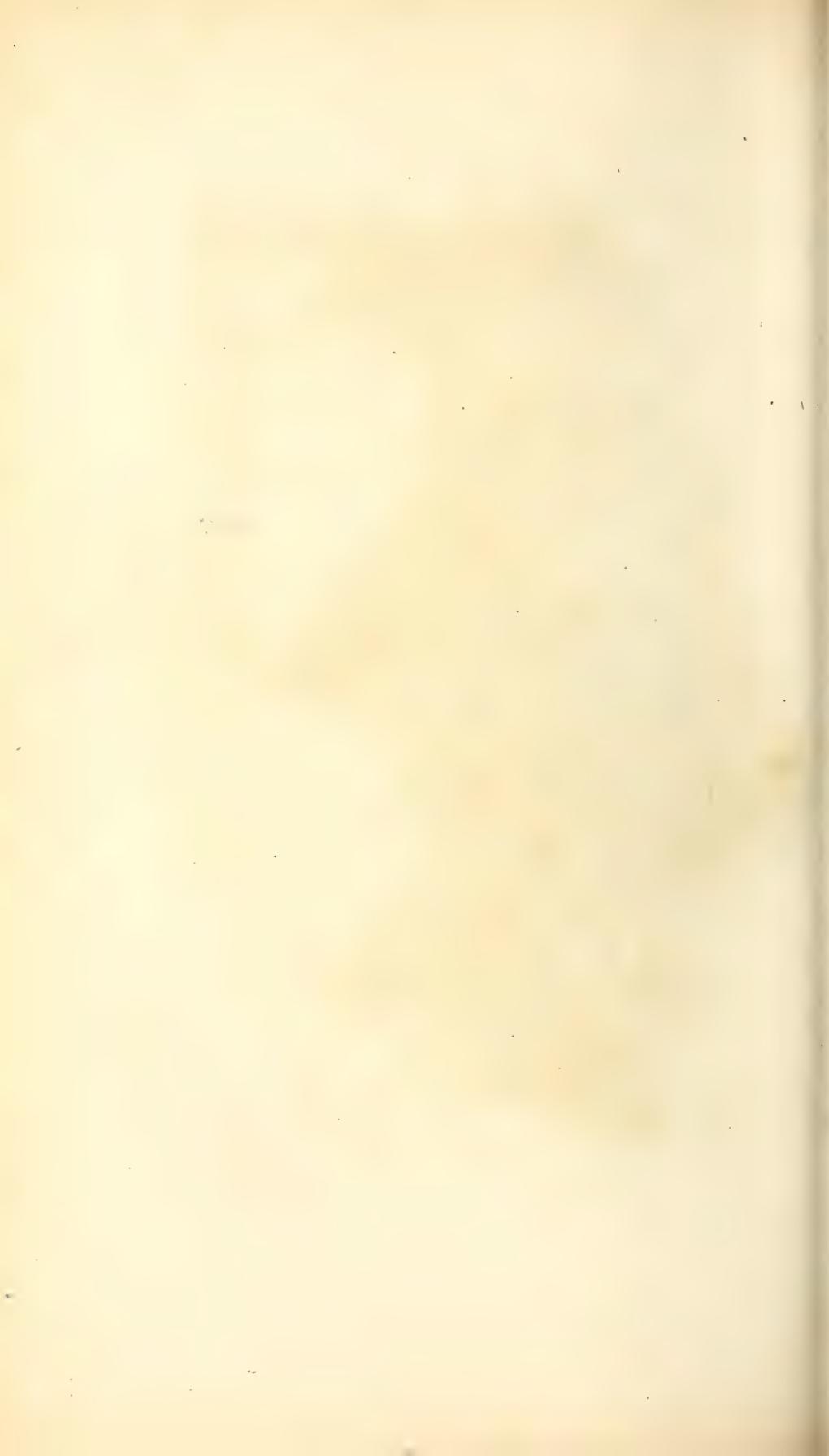
The principal European regions where this animal is at present found, are the marshy forests of Poland, the Carpathian mountains, and Lithuania. Its chief Asiatic residence is the neighbourhood of Mount Caucasus ; but it is also found in other parts of the Asiatic world.

The American Bison seems to differ in no respect from the European, except in being more shaggy, and in having a more protuberant bunch or fleshy substance over the shoulders : the fore parts of the body are extremely thick and strong ; the hinder parts comparatively weak. The colour of the American Bison is a reddish brown ; and the hair, in winter, is of a woolly nature, falling down over the eyes, head, and whole fore parts of the animal. In summer it often becomes almost naked, but particularly on the hind

AMERICAN BISON.

1801 Jan 7th Published by G.遥sby Fleet Street London.







AMERICAN BISON. var.

White Park

parts of the body. It grows, according to Lawson*, to a vast size, and has been found to weigh sixteen hundred, and even two thousand four hundred pounds ; and the strongest man cannot lift one of the skins from the ground.

It is difficult, as Mr. Pennant observes, to say in what manner these animals migrated from the old to the new world ; but it seems most probable that it was from the north of Asia, which, in ancient times, might have been stocked with them to its most extreme parts, notwithstanding they are now extinct in those regions. At that period the two continents might have been united between *Tchutki noss* and the opposite headlands of America ; and the many islands off that promontory, with the Aleutian, or *New Fox* islands, somewhat more distant, may with great reason be supposed to be fragments of land which joined the two continents, and formed their insular state by the mighty convulsion which divided Asia and America†.

In America the Bison occurs in the regions six hundred miles west of Hudson's Bay, which is their most northern residence. From thence they are met with in great droves as low as *Cibole*, in lat. 33. a little north of California, and also in the province of *Mivera*, in New Mexico ; and the species seems to cease immediately to the south of these parts. They also inhabit Canada, to the west of the lakes ; and in greater abundance in

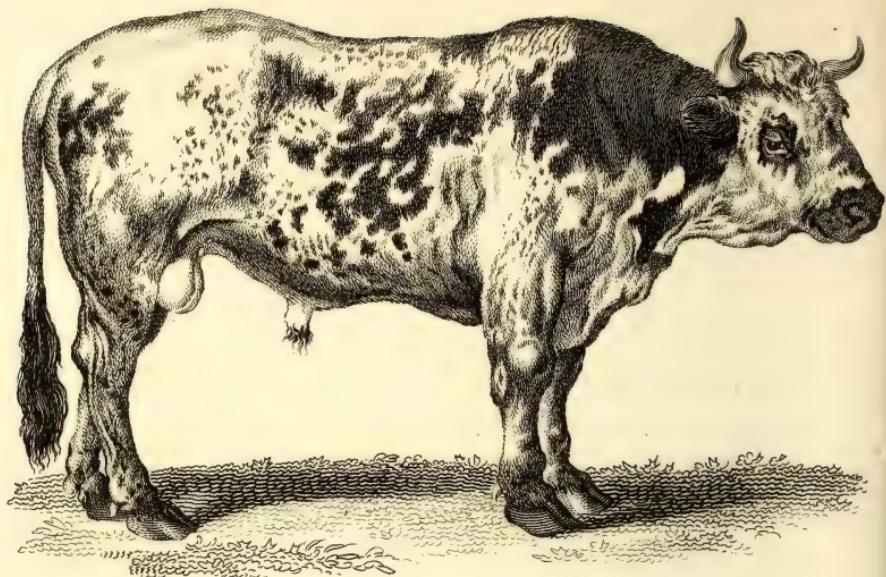
* Hist Carol. p. 116.

† Penn. Arct. Zool.

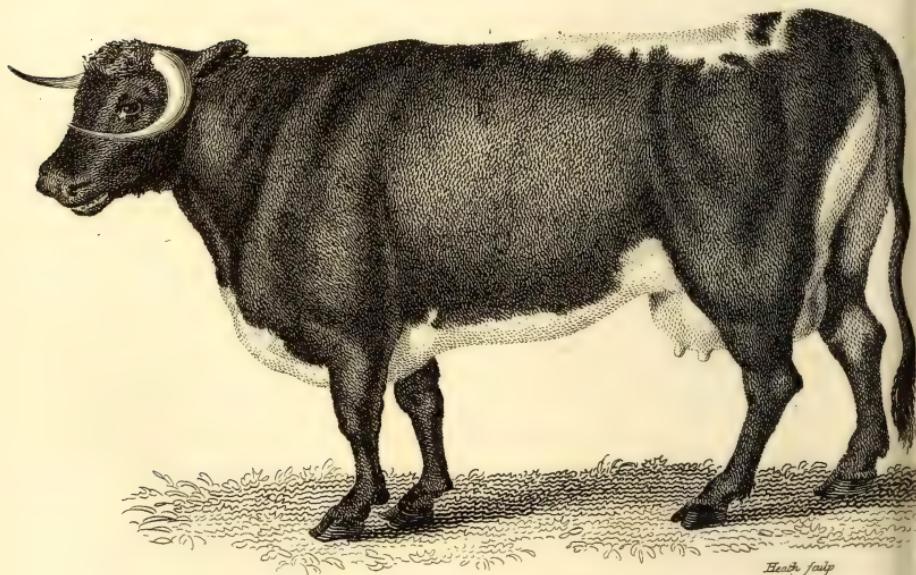
the rich savannas which border the river *Misisipi*, and the great rivers which fall into it from the west, in the upper Louisiana, where they are seen in herds innumerable, intermixed with those of Stags and Deer; feeding chiefly in the morning and evening, and retiring into the shade of the tall reeds which border the rivers, during the heat of the day. They are extremely wild, and fly from the face of mankind; but if wounded, become furious, and pursue their enemy. Their chace is a favourite diversion with the Indians, and the animals are killed either by shooting, or by gradually driving them into a small space, by firing the grass round the place where a herd is feeding. The animals are extremely terrified by fire, and thus crowd together in order to avoid it; when the bands of Indians close, and kill them thus pressed together without any hazard. On such occasions it is pretended that not less than fifteen hundred or two thousand have sometimes been killed at a time*. The flesh is used as a food, and the skins and hair as commercial articles: the latter, being of a woolly nature, may be spun into cloths, gloves, &c. which are said to be very strong, and to have the appearance of those manufactured from the best wool. The fleece or hair of one of these Bisons has been known to weigh eight pounds.

These were the only animals which bore any affinity to the European cattle, on the first disco-

* Arct. Zool.



COMMON OX.



Bentley Sculp

very of the American continent; and might have been made to answer every purpose of the European Cow; but the natives, being in a savage state, and living chiefly by chace, had never attempted the domestication of the animal.

COMMON OX.

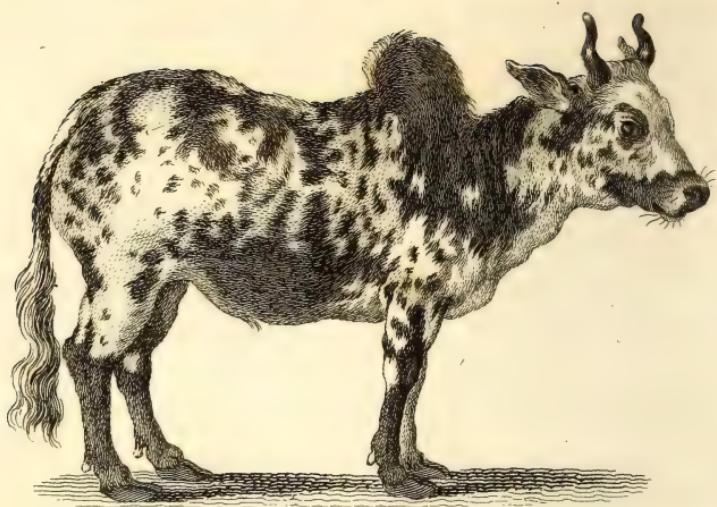
THIS is, in reality, the Bison reduced to a domestic state; in which, in different parts of the world, it runs into as many varieties as the Sheep; differing widely in size, form, and colour, according to climate and other circumstances. Its importance in this its domestic state needs not be mentioned. Every one knows that the Cow furnishes some of the chief articles both of use and luxury in civilized life, and the animal is, therefore, universally reared, except among savage nations. "Without the aid of this useful animal," says Buffon, "both the poor and the opulent would find great difficulty in procuring subsistence. Formerly the Ox constituted the whole riches of mankind; and he is still the basis of the riches of nations; which subsist and flourish in proportion only to the cultivation of their lands and the number of their cattle: for in these all real wealth consists: every other kind, even gold and silver, being only fictitious representatives, which have no value, but what is conferred on them by the productions of the earth." He proceeds, with but too much truth, to observe, that "those men who breed and multiply our cattle,

who spend their whole lives in rearing and guarding them from injuries, are debarred from enjoying the fruits of their labour. They are denied the use of flesh, and are obliged, by their condition, or rather by the cruelty of the opulent, to live, like horses, upon barley, oats, coarse pot-herbs, &c."

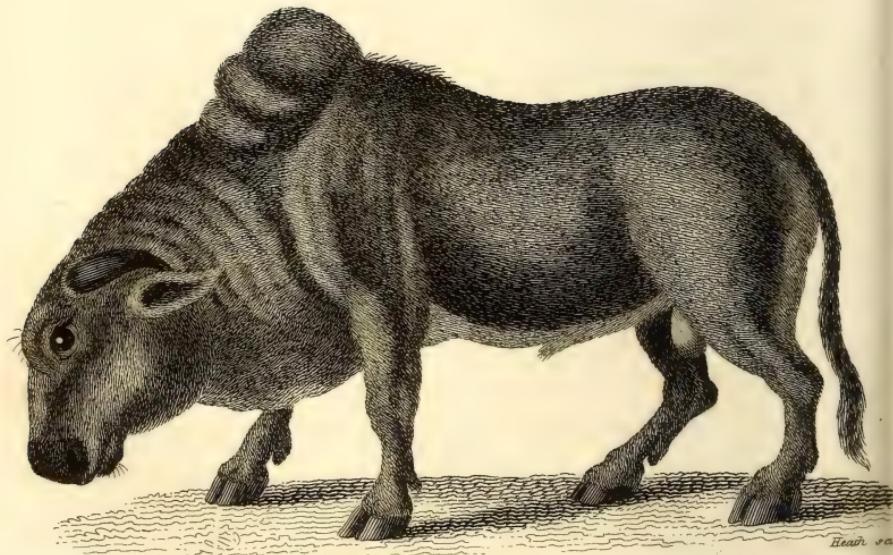
"The British breed of horned cattle has," says Mr. Pennant, "been so much improved by a foreign mixture, that it is difficult to point out the original kind of these islands. Those which may be supposed to have been purely British, are far inferior in size to those of the northern parts of the continent. The cattle of the high lands of Scotland are exceedingly small; and many of them, males as well as females, are hornless. The Welch runts are much larger: the black cattle of Cornwall are of the same size with the last. The large kind that is now cultivated throughout most parts of Great Britain, are either entirely of foreign extraction, or our own improved by a cross with the foreign kind. The Lincolnshire kind derive their size from the Holstein breed; and the large hornless cattle that are bred in some parts of England came originally from Poland *."

In his Natural History of this animal, the Count de Buffon is well known to have fallen into a very extraordinary error, viz. in affirming that at the age of three years, the Bull and Cow cast their horns, which are replaced by others

* Brit. Zool.



ZEBU.



INDIAN OX.

which are permanent. In his sixth supplemental volume this mistake is very properly and candidly acknowledged, and in part explained, by an observation communicated by Dr. Forster, viz. that at the age above-mentioned, though the horns are not cast, yet they exfoliate, as it were, and the animal rubs off a very slight external shell or lamina, scarcely thicker than common paper.

INDIAN OX.

THIS variety is found in many parts of India, as well as in the Indian and African islands, and particularly in Madagascar. It is of a reddish colour, of a very large size, and is distinguished by a very large protuberance above the shoulders.

ZEBU.

THIS variety resembles the preceding, but is extremely small, being found in some parts of India of a size scarce larger than a great dog. In colour it differs like the common cattle, being either grey, brown, white, &c. or variously spotted.

LOOSE-HORNED OX.

THIS is said to be found in Abyssinia, and in Madagascar, and to be distinguished by pendulous ears, and horns attached only to the skin, so as to hang down on each side.

BOURY.

OF the size of a Camel, and of a snowy-whiteness, with a protuberance on the back. Native of Madagascar, and some other islands, called by the name of Boury.

TINIAN OX.

OF a white colour, with black ears. Inhabits the island of Tinian.

Many other varieties might be mentioned, but it would be a useless and trifling labour. Almost every country producing some particular breed of domestic cattle.

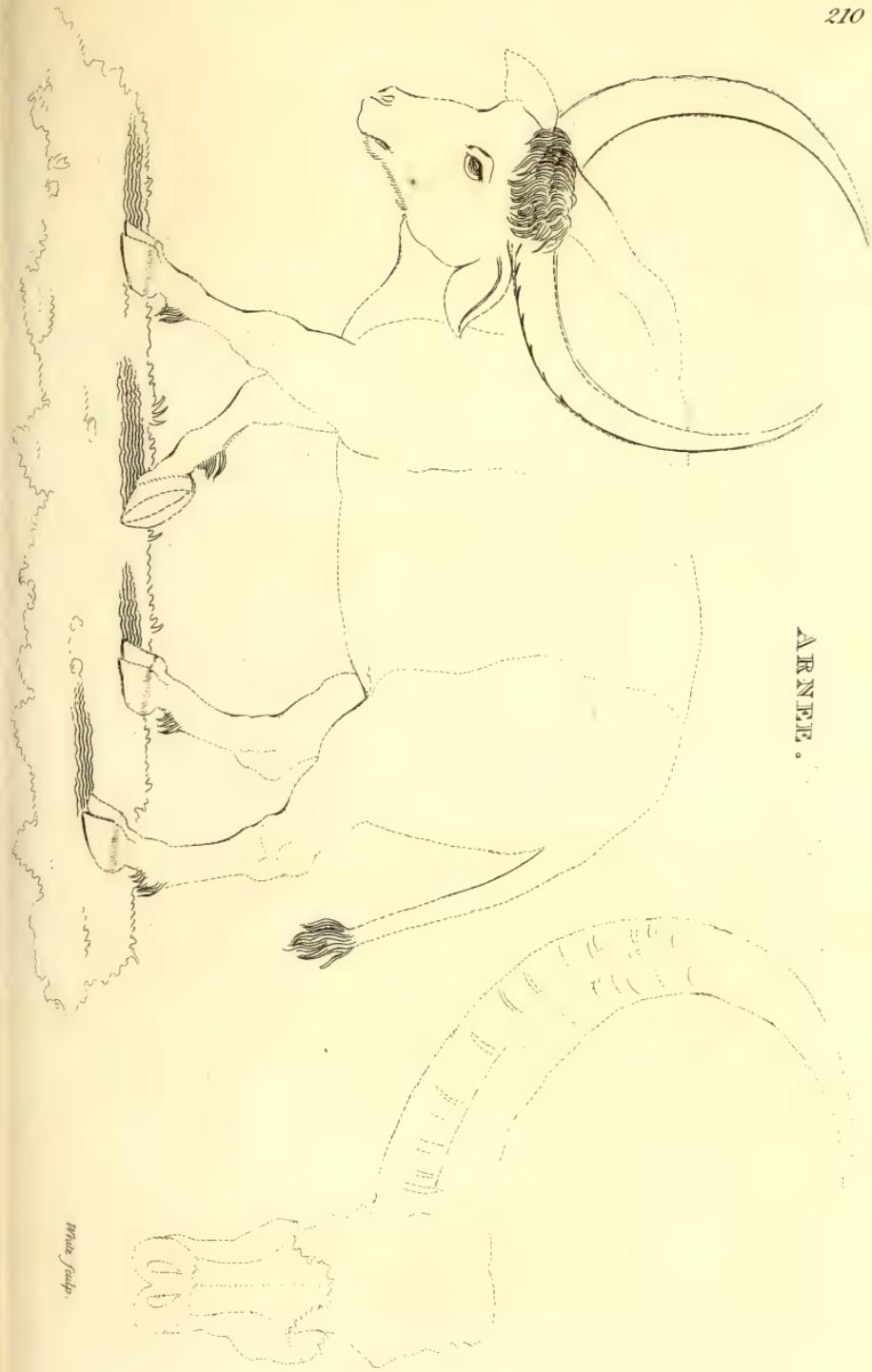
ARNEE.

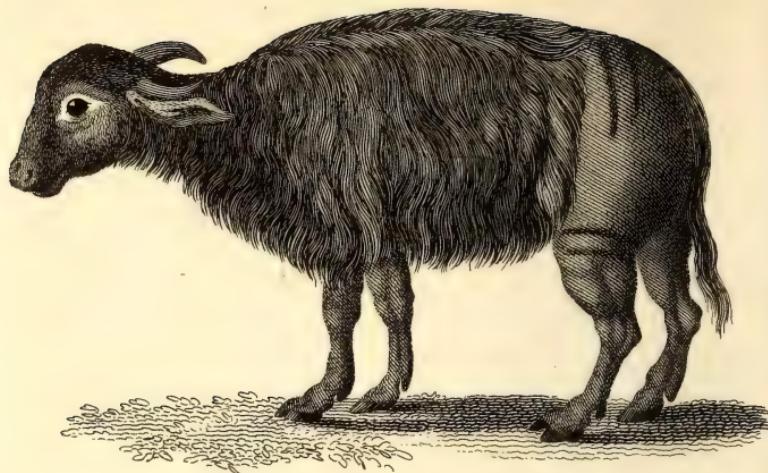
Bos Arnee. *B. cornibus erectis lunatis supra planiusculis rugosis.*
Ox with upright lunated horns, flat and wrinkled on their upper surface.

Bos Arnee. *Kerr's Animal Kingdom*, p. 336. pl. p. 295.

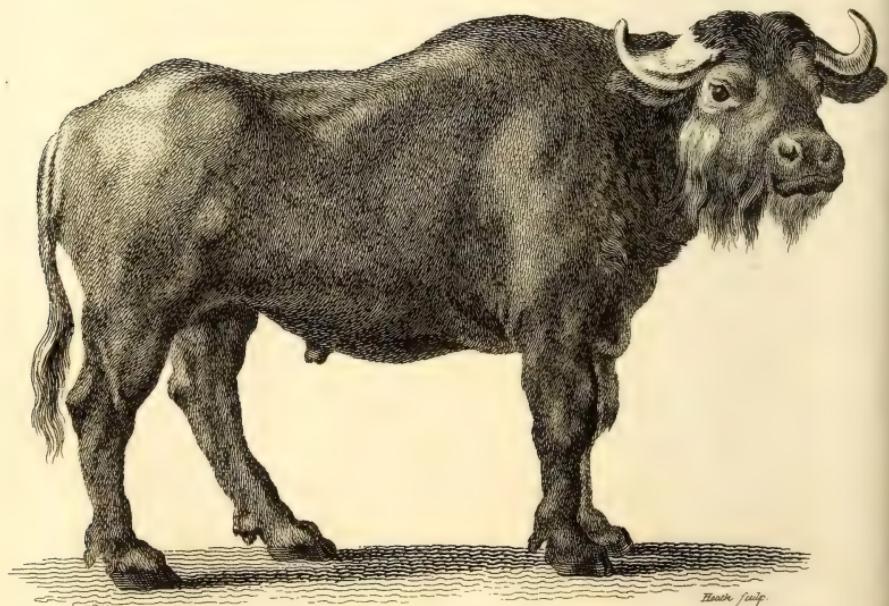
THIS is an Indian species, known chiefly from its vast horns, which are sometimes seen in Museums, and from Indian paintings, in which it is occasionally represented. In the work of Mr. Kerr, above referred to, it is said to have been met with by a British officer, in the woods above Ben-

ARNEE.





BUFFALO. *var. naked small*



BUFFALO.

1801. Jan'y. London Publish'd by G. Kearsley Fleet Street.

gal, and to have been about fourteen feet high, which is to be understood of the measure from the hoofs to the top of the horns. It is said to partake of the form of the horse, the bull, and the deer, and to be a very bold and daring animal, Mr. Kerr, in his publication, adds a figure of this species, from an Indian painting. In this painting the animal appears, in proportion to the human figures standing near, to be at least eight feet high at the shoulder. It is of a black colour, quite smooth, and without either protuberance or mane. Of this figure published by Mr. Kerr, a copy is introduced into the present work. Horns of the animal exist in the British and other Museums.

BUFFALO.

*Bos Bubalus. B. cornibus resupinatis intortis antice planis. Lin.
Syst. Nat. p. 99.*

Ox with horns lying backwards, turning inwards, and flat on the fore part.

Bubalus. *Gesn. Quadr. p. 139. Jonst. Quadr. t. 20.*

Buffelus. *Aldr. bisulc. p. 365. Jonst. Quadr. p. 53.*

Le Buffle. *Buff. 11. p. 284. pl. 25.*

Buffalo. *Pennant Quadr. 1. p. 28.*

IN its general appearance, the Buffalo is so nearly allied to the common Ox, that without an attentive examination, it might pass for a variety of the same animal. It differs, however, in the

form of its horns, and in some particulars relative to its internal structure*. The Buffalo is rather superior in size to the common Ox ; the head larger† in proportion ; the forehead higher, the muzzle of a longer form, but at the same time broad and square. But it is principally the form of the horns that distinguishes the Buffalo. They are large, and of a compressed or depressed form, with the exterior edge sharp : they are strait for a considerable length from their base, and then bend slightly upwards : their general colour is nearly black. The Buffalo has an appearance of great strength, and a more ferocious or malignant aspect than the Bull ; owing to the convexity of his forehead, the smallness of his eyes, the flatness of his muzzle, and the flatter and more inclined position of his horns. The general or prevailing colour of the Buffalo is blackish, except the hair on the top of the forehead, and that at the tip of the tail, which is of a yellowish white : the skin itself is also of a black colour ; and from this general cast it is but very seldom observed to vary ; though we meet with descriptions, in the works of travellers, of white, grey, and reddish or bay Buffaloes. In Europe they are, however, sometimes whitish on the insides of the limbs, and Mons. Sonnini records an example of one which

* These are given by Mr. Daubenton, in the Count de Buffon's Natural History.

† The Count de Buffon and Mr. Pennant, on the contrary, describe it as smaller ; but Mr. Sonnini affirms that it is larger.

he saw in Egypt, which had all the legs, belly, and sides, perfectly white. It varies, however, greatly as to the length and thickness of its hair, and is sometimes seen nearly naked.

This animal is originally a native of the warmer parts of India and Africa, and is merely one of the introduced or naturalized quadrupeds of Europe. It is said to have been introduced into Italy in the seventh century. The Count de Buffon considers it as an animal unknown to the ancients, but Mr. Pennant, with greater probability, supposes the *Boes aypnoi* of Aristotle, to have meant Buffaloes. The *Bos Indicus* of Pliny may be also supposed to refer to this species.

The Buffalo grows in some countries to an extremely large size. Mr. Pennant quotes a pair of horns in the British Museum in proof of this, which are six feet and a half long, and the hollow of which will hold five quarts. Jerom Lobo, in his account of Abyssinia, affirms that some of the horns of the Buffaloes of that country will hold ten quarts, and Dillon saw some in India which were ten feet long: they are sometimes wrinkled, but generally smooth. Wild Buffaloes occur in Malabar, and in the islands of Borneo and Ceylon, and are considered as excessively fierce and dangerous animals. The Buffaloes of Abyssinia grow to twice the size of our largest oxen, and are called Elephant-Bulls, not only on account of their vast size, but from their naked and black skin, resembling that of an Elephant.

As the Buffalo in his domesticated state is, in general, larger and stronger than the Ox, he is employed with advantage in different kinds of labour. Buffaloes are made to draw heavy loads, and are commonly directed and restrained by means of a ring passed through the nose. Two Buffaloes yoked, or rather chained, to a cart, are able to draw as much as four strong horses. As they carry their neck and head low, the whole weight of their body is employed in drawing; and their mass much surpasses that of a labouring horse. In its habits the Buffalo is much less cleanly than the Ox; delighting to wallow in the mud; and, next to the Hog, may be considered as the dirtiest of domesticated quadrupeds. His voice is deeper, more uncouth and hideous than that of the Bull. The milk of the female Buffalo is said by some authors to be not so good as that of the Cow, but it is more plentiful, and is used for the purposes of the dairy in the warmer regions. In the sixth supplemental volume of Buffon, it is affirmed that the milk is far superior to cows' milk, not only in taste but colour, and that it makes the most excellent butter, cheese, &c.* The skin and horns are of more value than all the rest of the animal; the former being of extreme strength and durability, and consequently

* In fact, such particulars as these must vary greatly, according to circumstances in different countries, and must depend on the manner of keeping and feeding the animal, as in Cows, &c.

well adapted for various purposes in which a strong leather is required ; the latter are of a fine grain, strong, and bear a good polish, and are therefore in much esteem with cutlers and other artificers, for handles, &c. &c. Italy is the country where Buffaloes are at present most common in a domesticated state, being used, as in India, both for the dairy and for draught. The district of the Pontine marshes is the spot which may be considered as their principal station. In India this animal is occasionally used for the saddle, as a substitute for the horse.

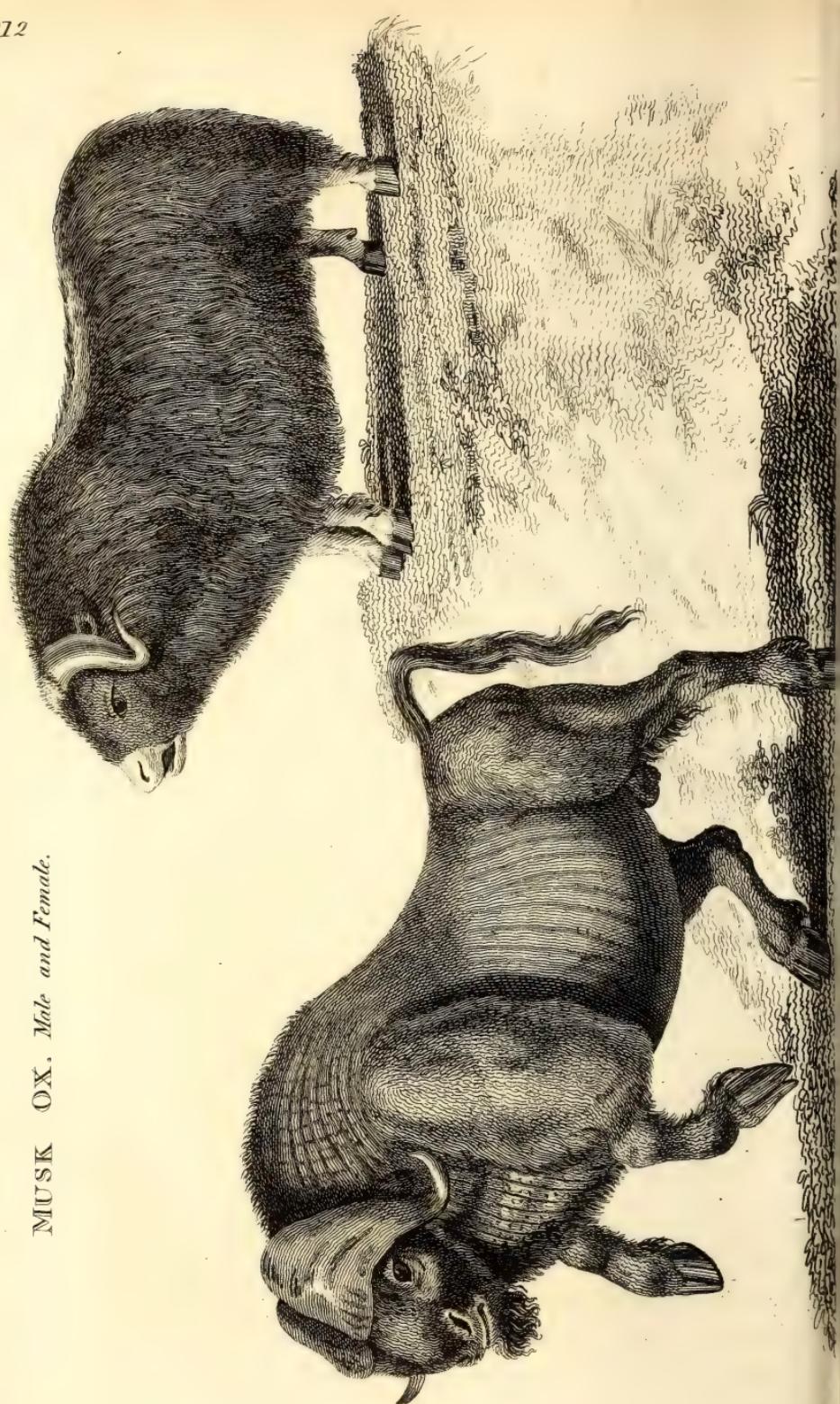
The Buffalo is observed to have a kind of musky smell ; a particularity which takes place in a much stronger degree in some others of this genus. Mr. Caetani, in one of his communications to Buffon, observes, that he once entertained an idea of preparing a kind of musk from the dung of the Buffalo ; but the same kind of musky odor is perceptible, though in a smaller degree, even in that of the common Ox, and for this reason it forms an ingredient in some of the old perfumes.

This animal has been well figured in Jonston, where it is shown in different attitudes.

According to Mons. Sonnini, it is very much cultivated in Egypt, where it yields plenty of excellent milk, from which butter is made, as well as several kinds of cheese. "The Buffalo," says this author, "is an acquisition of the modern Egyptians, with which their ancestors were unacquainted. It was brought over from

Persia into their country, where the species is at present universally spread, and is very much propagated. It is even more numerous than that of the Ox, and is there equally domestic, though but recently domesticated, as is easily distinguishable by the constantly uniform colour of the hair, and still more by a remnant of ferocity, and intractability of disposition, and a wild and lowering aspect, the characters of all half-tamed animals. The Buffaloes of Egypt, however, are not near so wild, nor so much to be feared as those of other countries. They there partake of the very remarkable gentleness of other domestic animals, and only retain a few sudden and occasional caprices. The sight of any thing red, which is said to make them fly into fits of ungovernable fury elsewhere, makes no impression on those of Egypt. The inhabitants of the country, besides their red turban, wear also, in general, another shawl of the same colour, which envelops the neck and chest, and I never observed that the sight of either at all affected the Buffaloes."—"They are so fond of the water," adds this author, "that I have seen them continue in it a whole day. It often happens that the water which is fetched from the Nile, near its banks, has contracted their musky smell."

The Buffalo, like other animals of this genus, admits of varieties as to size and figure. Of these the most remarkable is the small naked Indian Buffalo of Mr. Pennant, which is of the size of a runt, with nearly naked body, thinly beset with



MUSK OX, *Male and Female.*

bristly hair : the rump and thighs quite bare ; the first being marked on each side with dusky stripes pointing downwards ; the last with two transverse stripes : the horns compressed sideways, taper, and sharp at the point. It is a native of India.

Another variety, still smaller, is said to occur in the mountains of the Celebes, which are full of caverns. This variety is of the size of a middling sheep, and is seen in small herds, very wild, and difficult to be taken, and even in confinement are so fierce, that Mr. Pennant records an instance of fourteen stags being destroyed in the space of a single night by some of these animals which were kept in the same paddock.

MUSK OX.

Bos Moschatus. *B. cornibus (maris) approximatis, basi latissimis, introrsum deorsumque, apice extrorsum flexis, acuminatis, vellere propendente.*

Ox with very long pendent hair, and horns (in the male) approximated at the base, bending inwards and downwards, and outwards at the tips.

Bos moschatus. *B. cornibus approximatis basi latissimis introrsum deorsumque, apice extrorsum flexis acuminatis.* Lin. Syst. Nat. Gmel. p. 205.

Musk Ox. Pennant Quadr. 1. p. 31. Arct. Zool. 1. p. 8. pl. 7.

It is only within these few years that an accurate knowledge of this species has been obtained, and we are indebted principally to the labours of Mr. Pennant for the investigation of its history and manners.

It is a native of North America, where it appears to be a very local animal; being found first in the tract between *Churchill* river and that of the *Seals*, on the west side of *Hudson's Bay*, and is very numerous between the latitudes 66 and 73 north, which is as far as any tribes of Indians go. They are also found in the land of *Cris*, or *Cristinaux*, and the *Assinibouels*, and again among the *Attimospiquay*, a nation supposed to inhabit about the head of the river *Seals*, probably not very remote from the South Sea. They are continued from these countries southward as low as the provinces of *Quivera* and *Cibola*; for, according to Mr. Pennant, Father *Marco di Nica* and *Gomara* plainly describe them.

This animal is but of small size, being rather lower than the Deer, but larger or thicker in body. The hair, in the male, is of a dusky red colour, extremely fine, and so long as to trail on the ground, and render the animal a seemingly shapeless mass, without distinction of head or tail: the legs are very short; the shoulders rise into a lump, and the tail is very short, being a kind of stump of a few inches only, with very long hairs. Beneath the hair, on all parts of the animal, is an extremely fine cinereous wool, which is said to be more beautiful than silk when manufactured into stockings and other articles. The horns are closely united at the base, bending inwards and downwards; but turning outwards towards the tips, which are very sharp: near the base the horns are two feet in girth, but are only two feet

long, when measured along the curvature: the weight of a pair, separated from the head, is sometimes sixty pounds.

It should seem, from the figure of the bull of this species given by Mr. Pennant in his History of Quadrupeds, that the animal, like some other of the long-haired Buffaloes, sheds its hair at certain periods, and appears comparatively naked.

The Cow, or female, differs from the male in having the horns much smaller, and placed at the distance of nine inches from each other, at the base: they are seated on the sides of the head, and are of a whitish colour, about thirteen inches long, and eight inches round at the base: their curvature resembles that of the bull: the ears are erect, three inches long, somewhat sharp-pointed, and thickly lined with dusky hair, marked with a white stripe.

The general colour of the Cow is black, except that the legs are whitish, and between the horns there is a bed of white hair intermixed with rust-colour: a dusky mane, or elevated ridge of hair, runs along the back, and on the middle of the back is an oblong patch or bed of pure white; the hair of which is much shorter than on other parts, not exceeding three inches in length, and of a pale brown towards the roots. The hairs on the body are of two kinds; the longest measuring seventeen inches, and being very fine, glossy, and of a flattened appearance, when closely examined. Its colour is black, and it forms the general coating of the animal. The bed or patch of hair be-

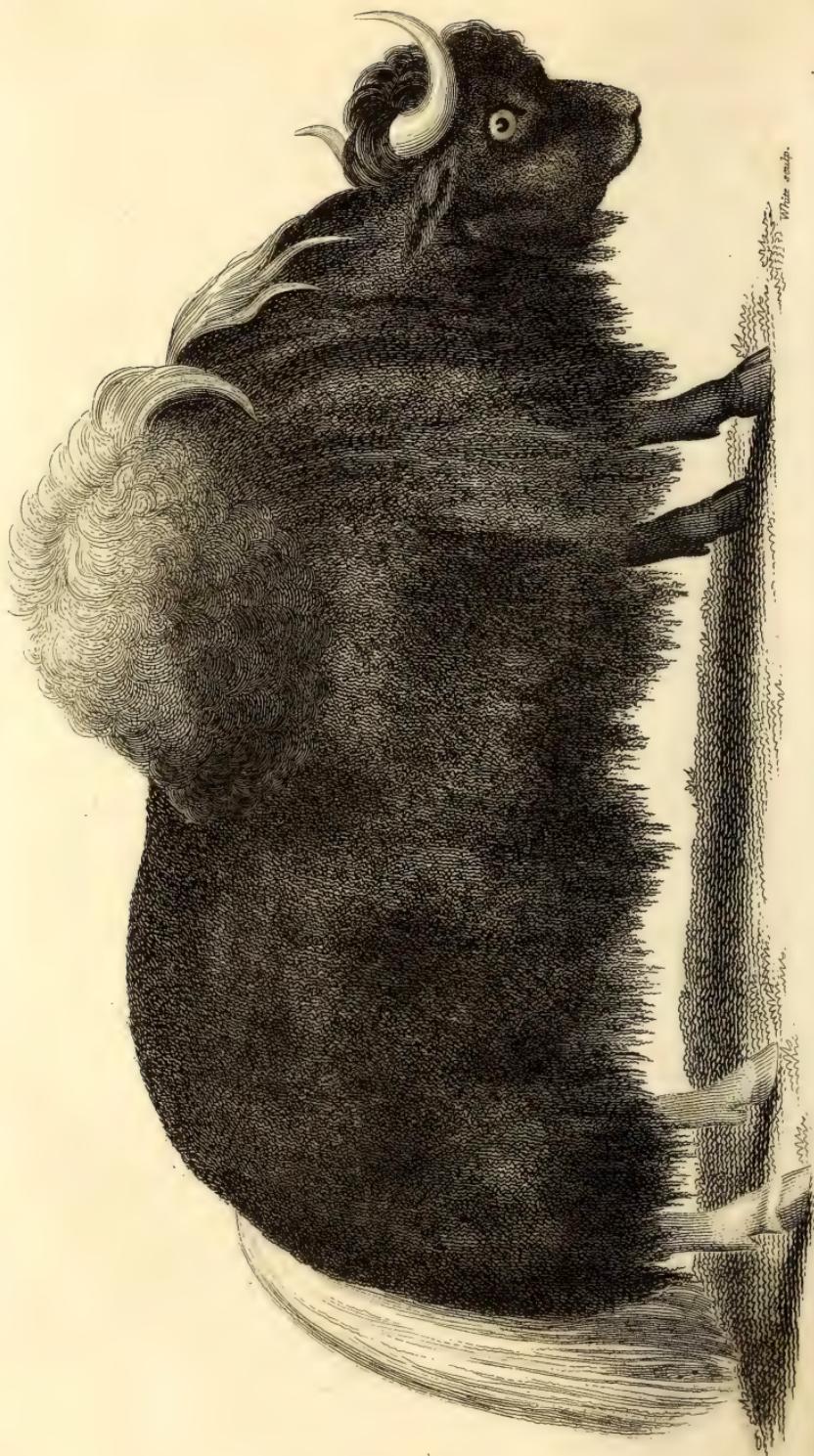
tween the horns, as well as that on the back, are, on the contrary, of a round form, and far finer than any human hair ; that of the white patch has also somewhat of a woolly constitution. Beneath every part of the long hair grows, as in the bull, a most exquisitely fine ash-coloured wool, superior perhaps to that of any other animal.

These creatures delight most in rocky and barren mountains, and seldom frequent the wooded parts of the country. They run nimbly, and are very active in climbing the rocks. Their flesh tastes very strongly of musk ; and the heart in particular is said to be so thoroughly impregnated with the flavour as to be scarce eatable. The flesh, however, is supposed to be very wholesome, and has been found a speedy restorative to sickly crews, who have made it their food.

These animals are shot by the Indians for the sake of the meat and skins, which, from their superior warmth, make the most excellent coverings.

Dr. Pallas informs us, that a skull of this species has been found in Siberia, on the arctic mossy flats near the mouth of the Oby.

Of the tail of this animal, says Mr. Pennant, the *Eskimaux*, of the north-west side of the bay, make a cap of the most horrible appearance ; for the hairs fall all round their head, and cover their faces ; yet it is of singular service in keeping off the mosquitoes, which would otherwise be intolerable.



White beard.

YAK

YAK.

Bos Grunniens. B. cornibus teretibus extrorsum curvatis, vellere propendente, cauda undique jubata. Lin. Syst. Nat. p. 99.

Ox with cylindric horns curving outwards, very long pendent hair, and extremely villose horse-like tail.

Bubalus cauda equina. Pall. Act. Pretrop. 1. pt. 2. p. 322.

Le Yak, ou Buffle à queue de Cheval. Buff. Sonnин. 29. p. 227. pl. 6.

Grunting Ox. Pennant Quadr. 1. p. 24. pl. 5.

Yak of Tartary. Turner's Account of an Embassy to Tibet, p. 186. pl. 10.

THIS species has been well described by Captain Turner, in his *Account of an Embassy to Tibet.*

"The Yak of Tartary, called Soora Goy in Hindostan, and which I term the bushy-tailed bull of Tibet, is about the height of an English bull, which he resembles in the general figure of the body, head, and legs. I could discover between them no essential difference, except that the Yak is covered all over with a thick coat of long hair. The head is rather short, crowned with two smooth round horns, which, tapering from the root upwards, terminate in sharp points: they are arched inwards, bending towards each other, but near the extremities are a little turned back. The ears are small: the forehead appears prominent, being adorned with much curling hair: the eyes are full and large: the nose small and convex: the nostrils small: the neck short, describing a curvature nearly equal both above

and below: the withers are high and arched. The rump is low: over the shoulders rises a thick muscle, which seems to be the same kind of protuberance peculiar to the cattle of Hindostan, covered with a profusion of soft hair, which, in general, is longer and more copious than that along the ridge of the back to the setting on of the tail. The tail is composed of a prodigious quantity of long, flowing, glossy hair; and is so abundantly well furnished, that not a joint of it is perceptible; but it has much the appearance of a large cluster of hair artificially set on: the shoulders, rump, and upper part of the body, are clothed with a sort of thick soft wool, but the inferior parts with strait pendent hair that descends below the knee: and I have seen it so long in some cattle, which were in high health and condition, as to trail upon the ground. From the chest, between the legs, issues a large pointed tuft of strait hair, growing somewhat longer than the rest: the legs are very short: in every other respect he resembles the ordinary bull.

“ These cattle, though not large boned, seem, from the profuse quantity of hair with which they are provided, to be of great bulk. They have a downcast heavy look; and appear, what indeed they are, sullen and suspicious, discovering much impatience at the near approach of strangers. They do not low loud, like the cattle of England, any more than those of Hindostan, but make a low grunting noise, scarcely audible, and that but seldom, when under some impression of uneasi-

ness. These cattle are pastured in the coldest parts of Tibet, upon the short herbage peculiar to the tops of mountains and bleak plains. The chain of mountains, situated between the latitudes 27 and 28, which divides Tibet from Bootan, and whose summits are most commonly clothed with snow, is their favourite haunt. In this vicinity the southern glens afford them food and shelter during the severity of winter; in milder seasons, the northern aspect is more congenial to their nature, and admits a wider range. They are a very valuable property to the tribes of itinerant Tartars, called Duckba, who live in tents and tend them from place to place: they at the same time afford their herdsmen an easy mode of conveyance, a good covering, and wholesome subsistence. They are never employed in agriculture, but are extremely useful as beasts of burden; for they are strong, sure-footed, and carry a great weight. Tents and ropes are manufactured of their hair, and, amongst the humbler ranks of herdsmen, I have seen caps and jackets made of their skins. Their tails are esteemed throughout the East, as far as luxury and parade have any influence on the manners of the people; and on the continent of India they are found under the denomination of *Chowries*, in the hands of the meanest grooms, as well as occasionally in those of the first minister of state. They are in universal use for driving away winged insects, flies, and mosquitoes, and are employed, as ornamental

furniture, upon horses and elephants ; yet the best requital with which the care of their keepers is at length rewarded, for selecting them good pastures, is in the abundant quantity of rich milk which they give, and the butter produced from it, which is most excellent. It is their custom to preserve this in skins or bladders ; and the air being thus excluded from it, it will keep in this cold climate throughout the year ; so that, after some time tending their herds, when a sufficient store is accumulated, it remains only to load their cattle, and drive them to a proper market with their own produce, which constitutes, to the utmost verge of Tartary, a most material article of produce."

The orientals are said to hold in high estimation a large kind of bezoar of the size of a goose-egg, which is sometimes found in this animal's stomach. The Yak varies in colour, as well as in the length and form of the horns. Those with white tails are most esteemed ; and it sometimes happens that the horns are as white as ivory.

According to Dr. Pallas, the calves, when first born, are covered with a strong woolly hair, nearly resembling that of a water spaniel, and in three months begin to acquire the long hair of the throat, lower parts, and tail.

From the figures given by Gmelin, in the Memoirs of the Academy of Petersburg, and apparently copied by Mr. Pennant, it should seem that the elevation on the shoulders is not universal, and it is probable that there are in this, as well as

in other species of this genus, several races or varieties, differing as to size, &c. as in common cattle. Those which were examined by Dr. Pallas were of the size of a small domestic cow; but the growth of these, as Mr. Pennant observes, might have been checked by being brought very young from their native country into Siberia. Marco Polo says, that the wild kind which he saw in his travels into Tartary were nearly as large as elephants, and though this may perhaps be an exaggeration, yet the length of some of the tails brought into Europe, and measuring six feet, seem to prove that the size of the animals to which they belonged must have been very great.

In India no man of fashion ever goes out, or sits in form at home, without two *Chowrabadars*, or brushers, attending him, each furnished with one of these tails mounted on silver or ivory handles, to brush away the flies. The Chinese dye them of a beautiful red, and wear them as tufts to their summer bonnets.

Mr. Pennant justly observes, that *Ælian* is the only ancient writer who takes notice of this singular species, and that amidst his immense farra-go of fables, he gives a very good account of it, under the name of “*Poephagus*, an Indian animal, larger than a horse, with a most thick tail, and black, composed of hairs finer than the human, and highly valued by the Indian ladies for ornamenting their heads: each hair, he says, was two cubits long. It was the most fearful

of animals, and very swift, and when chased by men or dogs, and found itself nearly overtaken, would face its pursuers, and hide its hind parts in some bush, and wait for them: imagining that if it could conceal its tail, which was the object they were in search of, it would escape unhurt. The hunters shot at it with poisoned arrows, and when they had slain the animal, took only the tail and hide, making no use of the flesh."

From the observations of Dr. Pallas and others who have examined the interior parts of this animal, it appears to make a nearer approach to the Buffalo than to any other species.

CAPE OX.

Bos Caffer. *B. cornibus basi latissimis, tum divaricatis deorsum, post sursum apice introrsum curvatis, juba brevi.* Lin. Syst. Nat. Gmel. p. 207. Sparrm. Act. Stockh. 1779.

Ox with the horns very broad at the base, then spreading downwards, next upwards, and at the tips curving inwards.

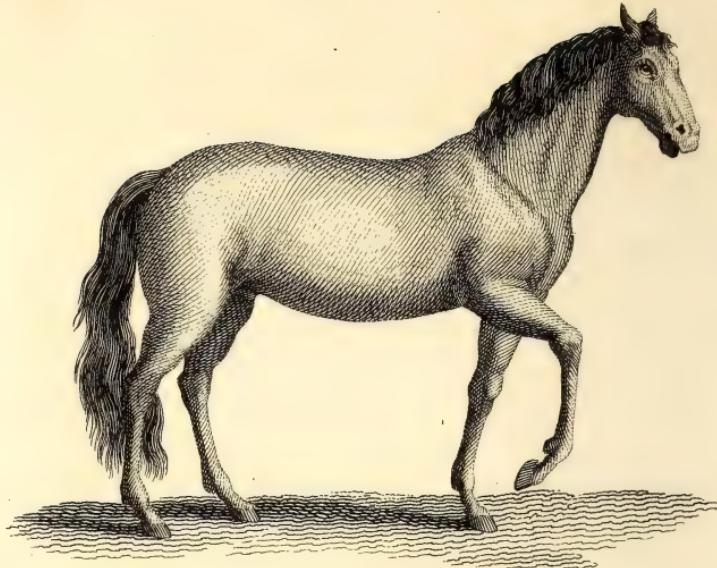
Cape Ox. Pennant Quadr. I. p. 32.

THIS species inhabits the interior parts of Africa, north of the Cape of Good Hope, and is greatly superior in size to the largest English Ox. It is of a very strong and muscular form, with a fierce and malevolent aspect. Its colour is a deep cinereous brown: the hair on the body is rather short, but that on the head and breast very long,

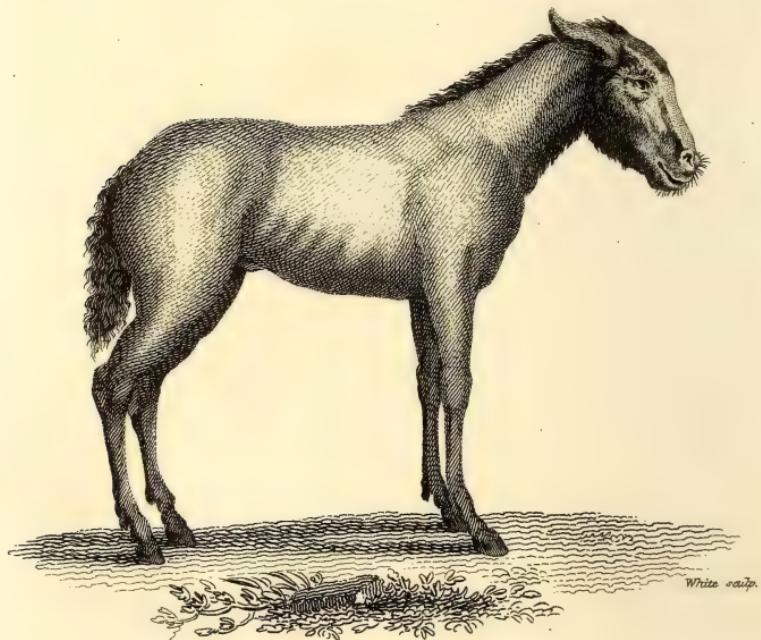
coarse, and black, hanging down the dewlap, like that of a Bison: from the hind part of the head to the middle of the back is also a loose black mane: the tail is nearly naked at the base; the remainder being covered with long loose hair. The horns are black; extremely broad at their base, resembling, in this respect, those of the Musk Ox, but do not stand quite close, as in that species, but separated by a narrow space of scarce an inch wide: they are transversely wrinkled above, and are very large and long, spreading far over the head towards the eyes, then growing taper, and bending down on each side of the neck; the ends inclining backwards and upwards: the space between the tips is sometimes five feet; the ears are a foot long, and half pendent or swagging downwards.

These animals are found in large herds in the desert parts beyond the Cape, retiring by day into the thick forests, and appearing chiefly towards the evening and morning; and if met in the narrow parts of woods, are extremely dangerous, rushing suddenly on the traveller, goring and trampling both man and horse under foot. It is also said that they will often strip off the skin of such animals as they have killed, by licking them with their rough tongues, as recorded by some of the ancient authors of the Bison. The skin is excessively strong, and is, on this account, in high estimation with the colonists at the Cape, for its superior excellence in making harnesses,

&c. It is to Dr. Sparrman, Dr. Forster, and Mr. Masson, that we are principally indebted for the particulars relative to the description and natural history of this animal, which, though long ago imperfectly known, has but lately been accurately described.



DOMESTIC HORSE.



WILD HORSE.

QUADRUPEDS.

ORDER

BELLUÆ.

EQUUS. HORSE.

Generic Character.

<i>Dentes Primores superiores sex, erecto-paralleli.</i>	<i>Front-teeth in the upper jaw six, parallel.</i>
<i>Inferiores sex, prominentiores.</i>	<i>In the lower jaw six, somewhat projecting.</i>
<i>Laniarii solitarii, inclusi, utrinque remoti.</i>	<i>Canine-teeth, one on each side, in both jaws, remote from the rest.</i>
<i>Pedes ungula indivisa.</i>	<i>Feet with undivided hoofs.</i>

COMMON HORSE.

Equus Caballus. E. cauda undique setosa. Lin. Syst. Nat. p. 100.

Horse with tail uniformly covered with long hair.

Equus. Plin. 8. c. 42. &c. &c. Gesn. Quadr. p. 442. Aldr. Solidung. p. 2. Jonst. Quadr. 1.

Le Cheval. Buff. 4. p. 174.

Generous Horse. Pennant Quadr. 1. p. 1.

THE Horse, the most noble and interesting of quadrupeds, is supposed to be found in a state of nature in several parts of Asia and Africa. In

this state it is smaller than the domestic or tame animal, with a larger head, a more arched forehead, and the body thickly covered with pale brown or mouse-coloured hair. It has been affirmed by several authors, that wild horses were to be found in the deserts of Arabia; but I must agree with Mons. Sonnini, in thinking it not very probable that this animal should be able to exist in such deserts. We must, therefore, rather suppose that it is occasionally found wild in some parts of the country bordering perhaps on the confines of the desert. It is certain that in Arabia the most beautiful domestic horses are bred; and even those which are kept by the Arabs of the desert are allowed to excel most others in swiftness and elegance of form; and it is from their breed that the European horses have been gradually improved.

Large herds of wild horses are said to be found about the lake *Arat*, near *Kuzneck*, in lat. 54; on the river *Tom*, in the southern parts of Siberia, and in the great Mongolian deserts, and among the *Kalkas*, north-west of China; and it is affirmed that they will occasionally surround and trepan, as it were, the horses of the Mongolians and Kalkas, while grazing, and carry them off among their own herd. They are extremely swift, active, and vigilant, and, like some of the Antelopes and other quadrupeds, have always a sentinel, who gives notice to the herd on the approach of danger, by a loud neigh; upon which they fly off with amazing rapidity.

Wild horses are found, according to Dr. Pallas, in the deserts on each side the river *Don*, towards the *Palus Maeotis*, but these are supposed to be the offspring of the Russian horses, which were employed in the siege of *Asoph*, in the year 1697, when for want of forage they were turned loose, and their descendants have gradually relapsed into the appearance of natural wildness. Those which are found in some parts of South America, are well known to be the descendants of the horses introduced by the Spaniards on the first discovery of America, and which have so far relapsed into a state of nature as to exhibit the general characters of the wild animal.

The horse, in its domestic or improved state, is found in almost every part of the world, except perhaps within the Arctic circle; and its reduction and conquest may well be considered, as Buffon properly observes, as the greatest acquisition from the animal world ever made by the art and industry of man.

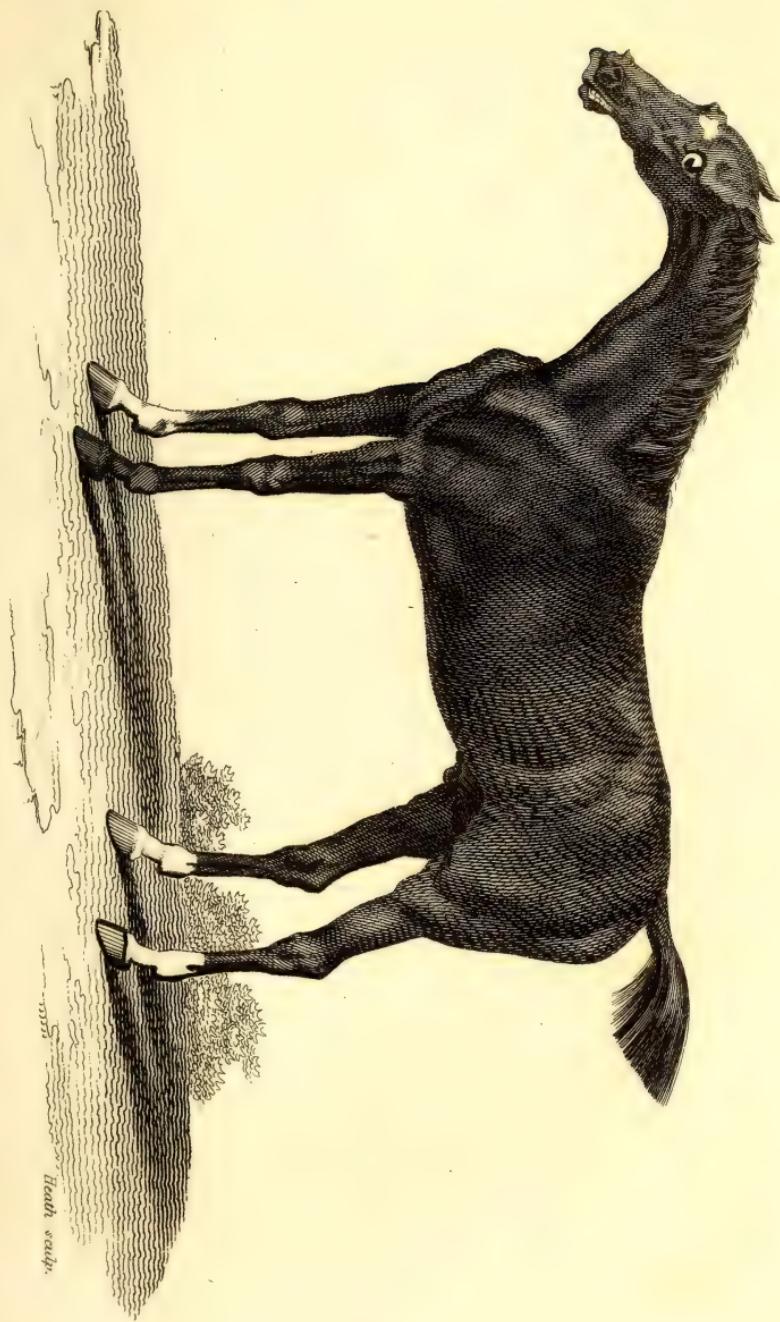
“ Of all quadrupeds,” says this author, “ the horse possesses, together with grandeur of stature, the greatest elegance and proportion of parts. By comparing him with the animals immediately above and below him, we shall find that the Ass is ill-made; that the head of the Lion is too large; the limbs of the Ox too slender and short; the Camel deformed; and the Elephant a shapeless mass. The regularity and proportion of the parts of his head give him a light and sprightly aspect, which is well supported by the beauty of his

chest. He elevates his head as if anxious to exalt himself above the condition of quadrupeds, and in this noble attitude he beholds man face to face."

Of the several breeds of Horses in common or general use in Europe, it is remarkable that none can come in competition with those of our own island, either for the strength required in laborious services, or for the swiftness and elegance of such as are bred for the course. The annals of Newmarket record instances of Horses that have literally outstripped the wind; as is proved from accurate calculations. The celebrated *Childers* is commemorated, in particular, as the swiftest of his tribe; and the instances of his speed may be found in various publications. He was known to have run near a mile in a minute; and to have cleared the course at Newmarket, which is only four hundred yards short of four miles, in six minutes and forty seconds; running at the rate of eighty-two feet and a half in the space of a second*.

Of nearly equal fame is the character of *Eclipse*, whose strength was said to be greater, and his swiftness scarcely inferior. This latter animal forms the subject of Mons. Sainbel's calculations, who, in his work on the Veterinary Art, has given an elaborate and curious description of his several proportions. It is remarkable that this horse was never esteemed handsome, though the mechanism

* Brit. Zool. &c.



of his frame, so far as regarded his powers of swiftness, was almost perfect.

As it may be some satisfaction to the reader to be made acquainted with the general proportions of this extraordinary courser, I shall here extract a part of Mons. Sainbel's observations on the subject.

"The horses of different countries are, in general, distinguished from each other by a peculiar appropriate conformation. The Spanish horse differs materially in his outward appearance from the English Race-horse. The difference, in the length and direction of the parts of which each is composed, produces in each a system from whose mechanical arrangement result motions very unequal in their extent. The Spanish horse cadences his steps with dignity, while the English horse drives his mass forward with strength and speed. This difference, which proceeds from the peculiar conformation of each, contradicts, in some particulars, the table of geometrical proportions in the use of the pupils of the veterinary schools of France. It proves that no common measure can be made to apply equally to every species, since Nature has even diversified the forms of the individuals which compose it. If each species has its own style of beauty; if even each individual has its peculiar beauty; if it is not possible to find two horses that perfectly resemble each other, we cannot pretend to assign any one form preferably to another as the rule of beauty for the Horse.

Were persons the best qualified, to endeavour to collect together the different beauties dispersed among the different individuals, they might indeed compose a model of each species sufficiently perfect to direct the painter or the statuary, but would deceive any one who would venture to choose an horse by it for his own use. The following observations do not take for their object those forms which please the eye at the first glance; that appearance which vulgarly passes for handsome; but that mechanical construction of the animal, from which result the possibility and extent of those motions by the means of which he is enabled to transport himself from one place to another with greater or less speed; and consequently an horse may appear ugly to a vulgar eye, and be still well proportioned. Eclipse was never esteemed handsome; yet he was swift, and the mechanism of his frame almost perfect. Whoever compares his proportions with those in the table* above mentioned will discover the following differences.

1. "In that table the horse should measure three heads in height, counting from the foretop to the ground. Eclipse measured upwards of three heads and a half.

2. "The neck should measure but one head in length: that of Eclipse measured a head and a half.

* Viz. that in use among the pupils of the Veterinary Schools of France.

3. “The height of the body should be equal to its length: the height of Eclipse exceeded his length by about one tenth.

4. “A perpendicular line falling from the stifle should touch the toe: this line in Eclipse touched the ground at the distance of half a head before the toe.

5. “The distance from the elbow to the bend of the knee, should be the same as from the bend of the knee to the ground: these two distances were unequal in Eclipse, the former being two parts of a head longer than the latter.

“This summary comparison shews, that the beauty of a Horse cannot be absolutely determined by general rules, but must ever be in relation to a particular species.”

Mons. Sainbel farther informs us, that, “on the 25th of February, 1789, Eclipse was seized with a violent cholic. The remedies acknowledged as most proper in that case were administered, but without effect. He expired on the 27th at seven o’clock in the evening, in the 26th year of his age.”

In Mons. Sonnini’s edition of Buffon may be found an exact enumeration of all the different colours of which horses are seen; with their several shades and names. On this subject also Gesner and Aldrovandus have given the usual enumerations: in general, however, it seems agreed, that the colour is one of the least important attributes; according to the well-known doctrine, now passed into a proverb, that a good horse is

never of a bad colour. The ancients appear to have had a predilection for white horses, which were used to draw the cars of emperors and conquerors in public processions. The poets also represent the steeds of many of their heroes as of a snow-white colour *. In our own country there seem to be no breeds of horses naturally of a perfect white; those which are so termed having been first grey, changed through age to whiteness.

The most beautiful general colour seems to be bright bay, which gives an air of peculiar neatness and elegance to the animal. Black horses are commonly of large size, and in this country are chiefly used for the cart and the plough. In some countries horses are not the less esteemed for being variegated or piebald, as it is commonly termed. This is said to be the case in China.

Mr. Bruce informs us, that the Horses of Nubia are of unparalleled beauty; far superior, in his opinion, even to those of Arabia. He observes, however, that from the manner in which they are fed, they are apt to become too fat or corpulent.

In some parts of India is found a remarkably diminutive race of Horses, scarcely exceeding the size of a large dog. Small breeds of Horses also occur in some of the northern parts of the world.

* It is remarkable that Virgil, though in the *Aeneid* he represents the horses of Turnus as white, yet in his *Georgics* condemns that colour. In reality, however, as the learned Dr. Martyn has well observed, this implies no contradiction; since Virgil might be supposed to admire the beauty of a white steed, though he could not commend the colour in a breed or stock.

JICKTA.

Equus Hemionus. *E. unicolor, cauda calva extremitate pilosa, cruce nulla.* Lin. Syst. Nat. Gmel. p. 210. Pall. it. 3. p. 217. Nov. Comm. Petrop. 19. p. 394. t. 7.

Horse of an uniform colour, without a distinct humeral cross, with naked tail haired at the tip.

Dshikketaei. Pennant Quadr. 1. p. 4.

Czigitai. Buff. Suppl. 6. p. 37.

THIS is a species, the knowledge of which seems to have lain dormant almost since the days of Aristotle, till it was revived by the observations of Dr. Pallas, who describes it under the title of *Equus Hemionus*; supposing it to be the *Hemionos* of Aristotle. It is a native of the wild or desert regions between the rivers *Onon* and *Argun*, in the most southern parts of Siberia, and extends over the vast plains and deserts of Tartary, as well as that of *Gobi*, which reaches even to India. In Tartary it is said to be most frequent about the salt lake called *Turicnoor*, which is at times dried up. It shuns wooded and mountainous regions; and is said to live in small herds of about twenty each. Its general manners are those of the common wild horse; but its swiftness is still greater; surpassing even that of the Antelopes; and is proverbial in some of the regions it frequents; and the Thibetians represent *Chammo*, their God of Fire, mounted upon it.

This animal has an appearance much resembling that of a common mule; having a large head, flat forehead, middle-sized eyes, with ash-coloured irides: the teeth are thirty-eight in all; being two

in number fewer than in the common horse: the ears are larger than in that species, erect, and lined with a thick, whitish, curling hair: the neck is slender and compressed; the mane upright, short, soft, and of a greyish colour. In place of the foretop there is a short tuft of downy hair, about two inches in length. The body is rather long, and the back but little elevated; the breast sharp and protuberant; the limbs long and elegant; the thighs thin, as in a mule; within the fore legs is an oval callus, but none in the hind legs: the hoofs are oblong, smooth, and black: the tail like that of a Cow, being slender, and naked for half its length; the remainder covered with long ash-coloured hair. The winter coat of this animal is of a brownish ash-colour, with the tips of the hair grey; it is about two inches long, and soft, like that of a Camel; slightly waved or undulated on the back. In summer it becomes much smoother, and in all parts elegantly marked by small featherings or turnings: the tip of the nose is white; and the remainder of the face of a light tawny cast, which is also diffused over all the upper parts: the hind thighs, insides of the limbs and belly, are white; and from the mane to the tail extends a chesnut or blackish-brown line, which is broadest on the loins, and gradually lessens as it approaches the tail: there is also a very slight appearance of a transverse band or cross over the shoulders. The length of this species, from nose to tail, is about six feet and a half; that of the trunk of the tail sixteen inches, and of the



ASS.



hairs beyond the tip about four inches : the height about three feet nine inches.

This species is supposed to have been found in Syria, and some other regions, in the days of Aristotle ; and is mentioned by Pliny, from the report of Theophrastus, as being found in Cappadocia. Its native name, among the *Mongolians* is *Dschik-ketai* : among the *Chinese*, *Yo-to-tse*.

ASS.

Equus Asinus. E. cauda extremitate setosa, cruce nigra supra humeros. Lin. Syst. Nat. p. 100.

Horse with blackish cross over the shoulders, and tail tipped with long hair.

Onager. *Plin. 8. c. 44. and 58. Aldr. solid. p. 352.*

Onagrus. *Gesn. Quadr. p. 19.*

Asinus. *Plin. 8. c. 43. Gesn. Quadr. p. 3. Aldr. solid. p. 295.
Jonst. Quadr. p. 16. pl. 6.*

L'Ane. *Buff. 4. p. 377. pl. 11.*

Ass. *Pennant Quadr. 1. p. 8.*

THE Ass is an animal which, having been long condemned to a state of the lowest servitude, and considered as a species of less dignity than the Horse, has acquired, in most parts of Europe, a character of contempt. Yet in its natural or wild state it exhibits an appearance very far superior both in point of beauty and vivacity. It is a native of many parts of Asia, living, like the rest of this genus, in a gregarious manner. It chiefly occurs in the dry and mountainous deserts of Tartary, and in the southern parts of India and Persia. It is

also said to be found in Africa, and to occur, though but very rarely, in some parts of Syria and Arabia; countries where it was in ancient times extremely common. In this its natural state, its colour is said to be white, or of a very pale silvery grey, with a slight tinge of straw-colour on the sides of the neck and body: along the back runs a deep brown stripe of thickish wavy hair, to the beginning of the tail: this stripe is crossed over the shoulders, as in the tame animal, by another of similar colour; but it is said that this is peculiar to the male. The neck is furnished with a brown mane three or four inches long, consisting of soft woolly hair: the tail is tufted at the end by dusky hairs of about six inches in length: the forehead is arched, and the ears erect, pointed, and lined internally with white curling hairs. It stands higher on its limbs than the domesticated animal, and its legs are more slender in proportion. The hair on the whole body is very fine, bright, soft, and silky; and on some parts is marked by a few obscure waves or undulations of a darker shade than the rest. Those which are found in Africa are said to be of a pale ash-colour, rather than of the cast above described.

The food of the wild Ass consists chiefly of saline, or bitter and lactescent plants. It is also fond of salt or brackish water. The manners of these animals very much resemble those of the wild Horse. They assemble in troops, under the conduct of a leader or centinel; and are ex-

tremely shy and vigilant, and, like the former animals, dart off with the utmost rapidity, on the sight of mankind. They have been at all times celebrated for their swiftness. Their voice resembles that of the common or domesticated Ass, but is somewhat shriller.

From this animal the domestic Ass has been gradually derived, which admits of considerable varieties as to size, beauty, and strength, in different countries. Those of the eastern parts of the world, as well as those of Africa, still partake, in a great degree, of the native elegance of their original or stock; and are very different from those commonly seen in the northern parts of Europe; for this animal seems to be much injured by the influence of a comparatively cold climate.

The general run of European Asses have large slouching ears, a heavy appearance, and are of an ash-colour, more or less deep in different individuals, with a blackish dorsal stripe, crossed by another over the shoulders, and thus exhibiting the original mark of their species. In their manners they exhibit no superior marks of sagacity, but have the merit of being patient, quiet, and tractable, and are chiefly employed in the inferior offices of servitude. The Ass is observed to be very temperate in his food, and by no means delicate in the choice of it; eating thistles, and a variety of coarse herbage which the horse refuses. He is said to be particularly fond of plantane, for which he will neglect every other herb of the

pasture. In his choice of water he is remarkably nice, and will drink only of that which is clear. He has also an aversion to mud or water in his road, and will pass out of the way rather than wet his feet in a puddle. He is by no means void of docility, as vulgarly supposed ; but may be made to practise several exercises not usual with his race. His voice, as is well known, is a most hideous bray ; a discordant succession of flats and sharps. This is most strong in the male animal ; the voice of the female being weaker, though somewhat shriller. It is singular, however, that some authors have denied that the female Ass can properly be said to bray ; and Aldrovandus censures Ovid for this line : “ *Et rudit e scabra turpis Asella mola.* ”

The good qualities of this despised and often ill-treated animal are so prettily detailed by the ingenious Abbé la Pluche, that I shall make no apology for here inserting his eulogy.

“ I confess,” says this agreeable writer, “ that the Ass is not master of very shining qualities ; but then he enjoys those that are very solid. If we resort to other animals for distinguished services, this at least furnishes us with such as are most necessary. His voice is not altogether melodious, nor his air majestic, nor his manners very lively ; but then a fine voice has very little merit with people of solidity. With him the want of a noble air hath its compensation in a mild and modest countenance ; and instead of the boisterous and irregular qualities of the Horse, which are frequently

more incommodious than agreeable, the behaviour of the Ass is entirely simple and unaffected: no supercilious and self-sufficient air. He marches with a very uniform pace, and though he is not extraordinary swift, he pursues his journey for a long time, and without intermission. He finishes his work in silence, serves you with a steady perseverance, and discovers no ostentation in his proceedings, which is certainly a considerable accomplishment in a domestic. His meats require no preparation, for he is perfectly well contented with the first thistle that presents itself in his way. He does not pretend that any thing is due to him, and never appears squeamish or dissatisfied: he thankfully accepts whatever is offered to him: he hath an elegant relish for the best things, and very civilly contents himself with the most indifferent. If he happens to be forgotten, or is fastened a little too far from his fodder, he entreats his master, in the most pathetic language he can utter, to be so good as to supply his necessities. It is very just that he should live, and he employs all his rhetoric with that view. When he has finished his expostulations, he patiently waits the arrival of a little bran, or a few withered leaves; and the moment he has dispatched his meal, he returns to his business, and marches on, without a murmur or reply. His occupations have a tinge of the meanness of those who set him to work; but the judgments that are formed, both of the Ass and his master, are equally partial. The employments of a Judge,

a Man of consequence, and an Officer of the revenue, have an important air, and their habit imposes on the spectators. On the contrary, the labour of the Peasant has a mean and contemptible appearance, because his dress is poor, and his condition despised. But we really make a false estimation of these particulars. It is the labour of the Peasant which is most valuable, and alone truly necessary. Of what importance is it to us when a Manager of the revenue glitters from head to foot with gold? We have no advantage from his labours. I confess, Judges and Advocates are, in some measure, necessary; but they are made so by our folly and misbehaviour; for they would no longer be wanted, could we conduct ourselves in a rational manner. But, on the other hand, we could on no account, and in no season or condition of life, be without the Peasant and the Artisan. These people may be considered as the souls and sinews of the community, and the support of our life. It is from them we are constantly deriving some accommodations for our wants. Our houses, our habits, our furniture, and our sustenance, rise out of their labours. Now what would become of your Vine-dressers, Gardeners, Masons, and the generality of country people, that is to say, of two-thirds of all mankind, if they were destitute either of men or horses to convey the commodities and materials they employ and manufacture? The Ass is perpetually at their service: he carries fruit, herbs, coal, wood, bricks, tiles, plaster, lime, and straw.

The most abject offices are his ordinary lot, and it is as singular an advantage to this multitude of workmen, as well as ourselves, to find a gentle, strong, and indefatigable animal, who, without either expence or pride, replenishes our cities and villages with all sorts of commodities. A short comparison will complete the illustration of his services, and in some measure raise them out of their obscurity. The Horse very much resembles those nations who are fond of glitter and hurry; who are perpetually singing and dancing, and extremely studious to set off their exterior, and mix gaiety in all their actions. They are admirable in some distinguished and decisive occasions; but their fire frequently degenerates into romantic enthusiasm; they fall into wild transports; they exhaust themselves, and lose the most favourable conjunctures for want of management and moderation. The Ass, on the contrary, resembles those people who are naturally heavy and pacific, whose understanding and capacity are limited to husbandry or commerce, and who proceed in the same track without discomposure, and complete, with a positive air, whatever they have once undertaken."

The Ass, from his natural tardiness, and the awkwardness of his appearance, has frequently excited the ridicule of inconsiderate spectators. It is recorded that *Crassus*, a Roman of some distinction, laughed but once in his life, and that at an Ass eating thistles; a circumstance in itself by no means ridiculous. There is indeed a plant

of the thistle tribe, called *Onopordon*, which, if its effects were as vulgarly reported, might perhaps, in some degree, have justified this Roman's mirth; but as this is merely an idle fancy, it is difficult to guess at the reason of such sudden merriment in a person of a constitution so peculiarly saturnine. The learned Sir Thomas Brown, in his *Pseudodoxia Epidemica*, has not thought this relation of Crassus unworthy of his notice; and has delivered his sentiments in language so curiously majestic, that I cannot but flatter myself the reader will be pleased with the quotation.

"The relation of *Lucilius*, and now become common, concerning *Crassus*, the grandfather of *Marcus* the wealthy Roman, that he never laughed but once in all his life, and that was at an *Ass* eating thistles, is something strange. For if an indifferent and unridiculous object could draw his habitual austereness unto a smile, it will be hard to believe he could with perpetuity resist the proper motives thereof. For the act of laughter, which is evidenced by a sweet contraction of the muscles of the face, and a pleasant agitation of the vocal organs, is not merely voluntary, or totally within the jurisdiction of ourselves: but as it may be constrained by corporal contaction in any, and hath been enforced in some, even in their death; so the new, unusual, or unexpected jucundities, which present themselves to any man in his life, at some time or other, will have activity enough to excitate the earthiest soul, and raise a smile from the most composed tempers. Cer-

tainly the times were dull when these things happened, and the wits of those ages short of those of ours ; when men could maintain such immutable faces, as to remain like statues under the flatteries of wit, and persist unalterable at all efforts of jocularity. The spirits of Hell, and *Pluto* himself, whom *Lucian* makes to laugh at passages upon earth, will plainly condemn those *Saturnines*, and make ridiculous the magnified *Heraclitus*, who wept preposterously, and made a Hell on earth ; for, rejecting the consolations of life, he passed his days in tears, and the uncomfortable attendants of Hell."

It may not be improper to observe, that the *Mule* is nothing more than a hybrid animal, between this species and the Horse, differing in strength, size, and beauty, according to the predominancy of its parental species. Mules are very little used in this country, but in Spain and some other parts of Europe are in much esteem, and have the reputation of being remarkably sure-footed.

ZEBRA.

*Equus Zebra. E. fuscis fuscis versicolor. Lin. Syst. Nat.
p. 101.*

White Horse, variegated with numerous dark-brown stripes.

Zebra Indica. Aldr. solid. p. 416. Jonst. Quadr. p. 21.

Zeura, ou Zecora. Lobo. Abiss. 1. p. 291.

Zebra. Edw. pl. 222.

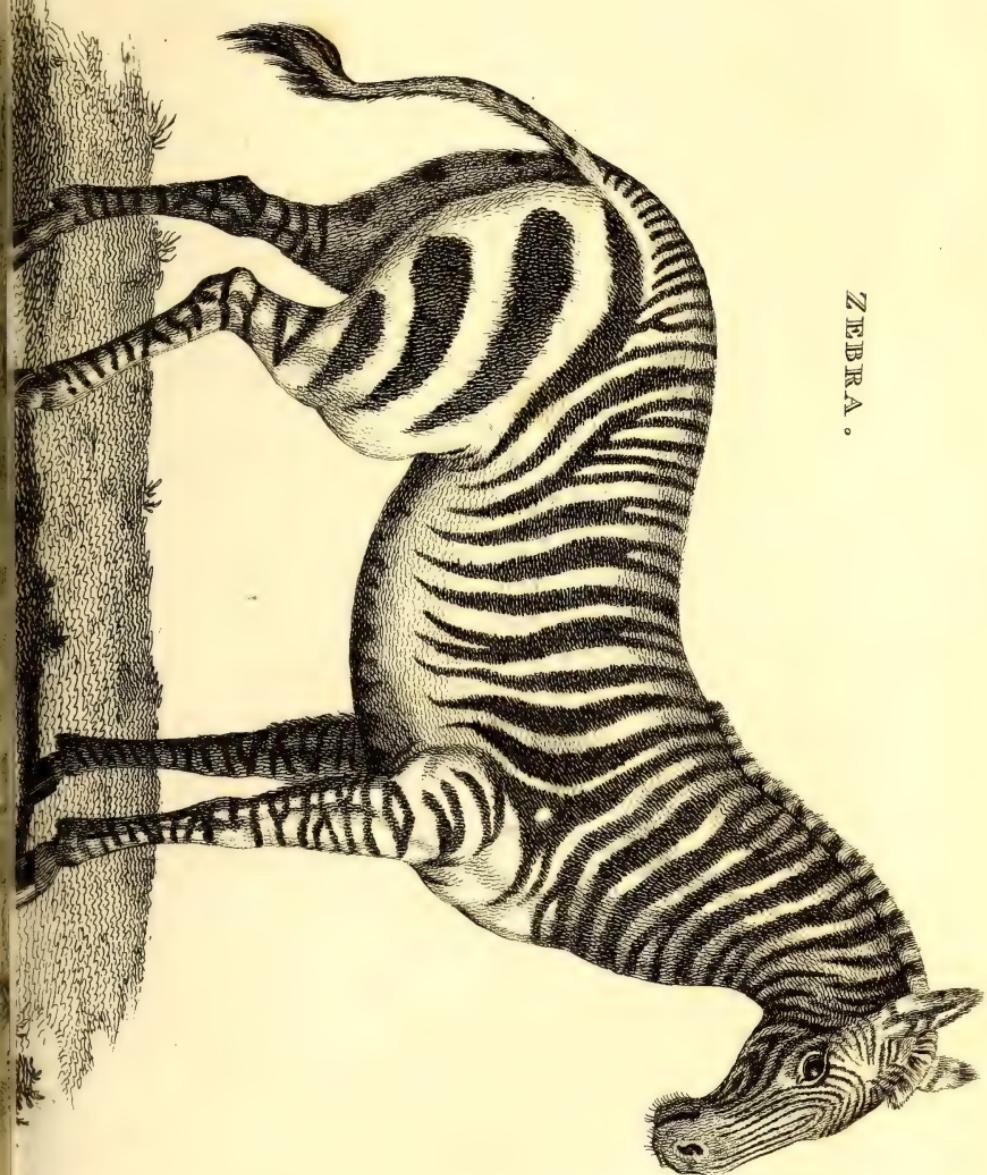
Le Zebre. Buff. 12. p. 1. pl. 1, 2.

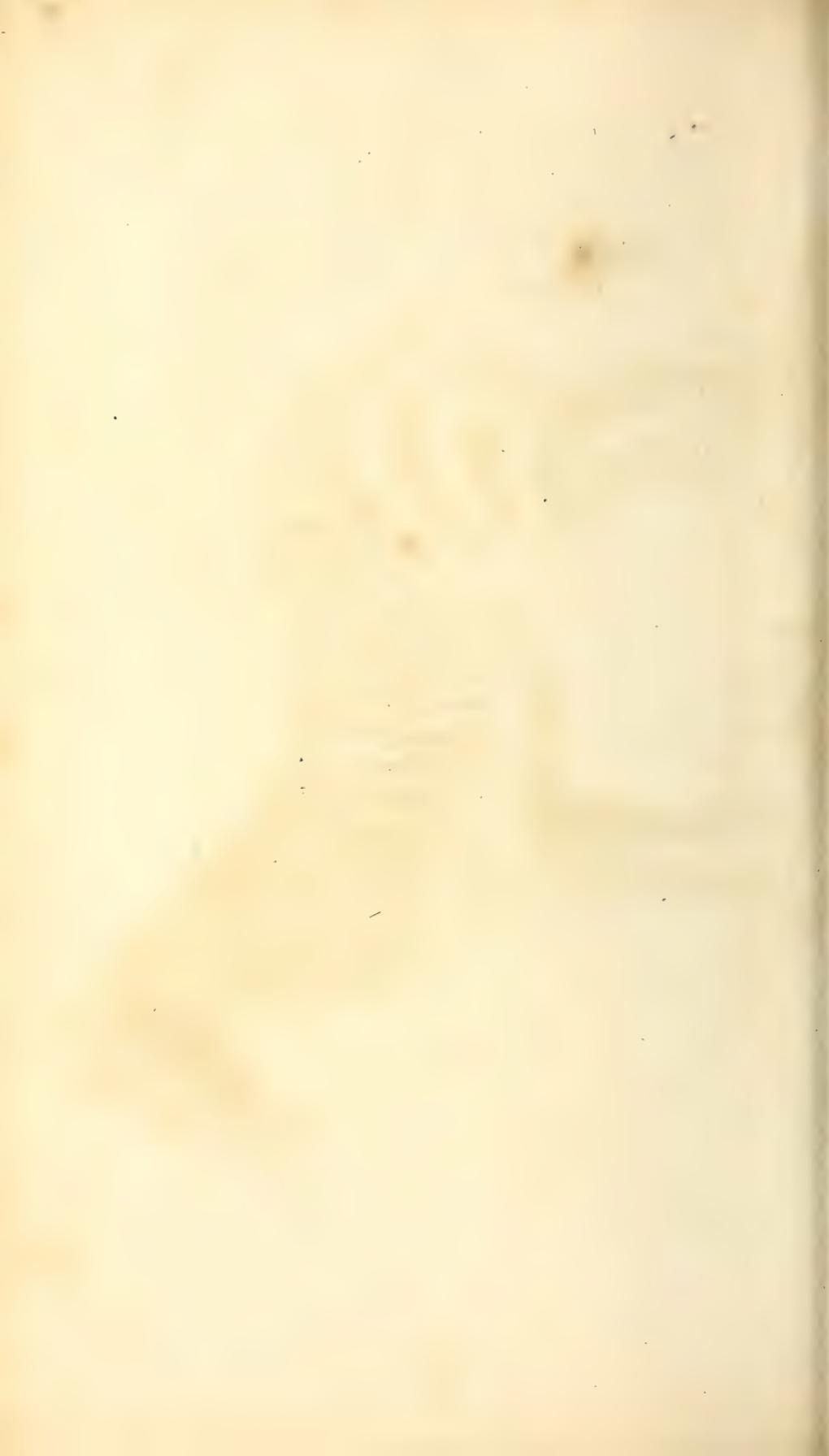
Zebra. Pennant Quadr. 1. p. 13.

THAT most beautiful quadruped, the Zebra, is a native of the hotter parts of Africa, being found from Æthiopia to the Cape of Good Hope, living in large herds, and possessing much of the manners both of the wild Horse and the Ass; being excessively swift and vigilant. It is of a still wilder or more unmanageable disposition than either of the former animals, and even such as have been taken very young are with much difficulty brought to any degree of familiarity, and have very rarely been rendered so far manageable as to submit to the bridle.

The size of the Zebra is equal, or rather superior, to that of the Ass, and its form more elegant; since, exclusive of its beautiful colours, the head and ears are well shaped, and of moderate size. The colour is either milk-white, or cream-colour, with a very slight cast of buff or pale ferruginous; and the whole animal is decorated on every part with very numerous black or blackish-brown stripes, disposed with the utmost symmetry, and exhibiting an appearance not so

ZEBRA.





easily described in words, as by a well-conducted figure. These stripes run in a transverse direction both on the body and limbs, and in a longitudinal direction down the face, and their regular and beautiful gradation, flexures, and termination on the different parts of the animal, cannot be viewed without admiration. The tail is of moderate length, round, rather slender, marked with small blackish bars, and terminated by a thickish tuft of brown or black hair.

The Zebra seems to have been unknown to the ancients; the *Onager* of Pliny and other authors relating only to the wild ass.

Attempts have been made to domesticate the Zebra, and reduce it to obedience, like the Horse; but, as yet, the success has not been very considerable. Experiments of this kind have been chiefly made in Holland, and we are told by the Count de Buffon, that Zebras have been yoked to the Stadholder's chariot *: this, however, proved to be a piece of misinformation, and is accordingly contradicted in the sixth supplemental volume. Persevering attention may perhaps at length reduce this beautiful animal to a state of domesticity. If this were practicable, a new and elegant addition would be made to the luxuries of civilized life; since the Zebra scarcely yields to the Horse in gracefulness of figure, exclusive of its captivating colours.

* Buff. Suppl. vol. 3.

QUAGGA.

Equus Quagga. E. supra castaneus fasciis fuscis, ad latera maculatus, subtus, pedibus cruribusque albus. Lin. Syst. Nat. Gmel. p. 213.

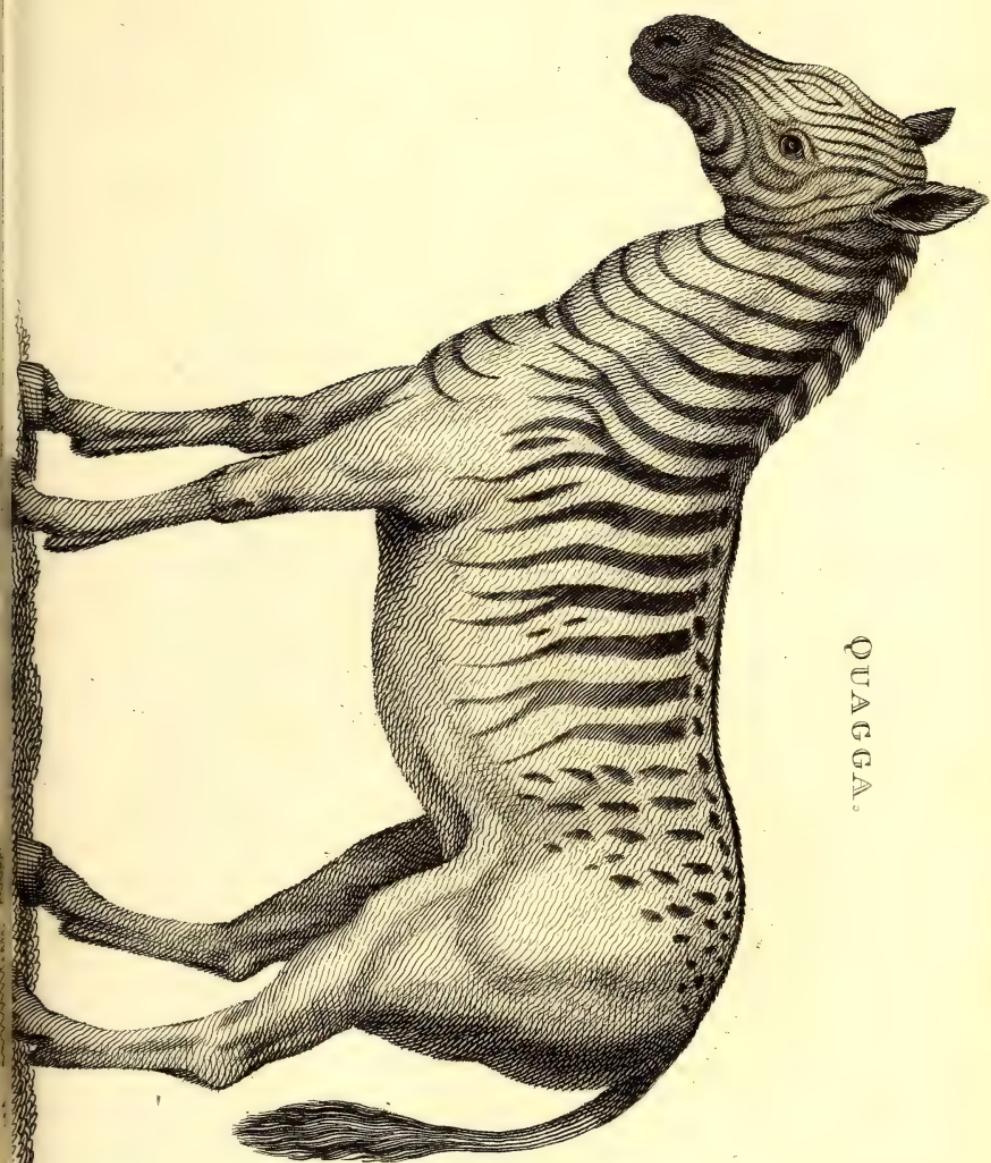
Subferruginous Horse, whitish beneath, striped above with brown, spotted towards the hind parts.

Opeatha, or Quagga of the Hottentots. *Masson's Travels, Phil. Trans. vol. 66. p. 297.*

Le Kwagga, ou Couagga. *Sonnini's Buff. vol. 29. p. 380. pl. 6. Female Zebra. Edw. pl. 223.?*

Quagga. *Pennant Quadr. I. p. 14.*

THIS animal, which till lately had been confounded with the Zebra, is now acknowledged as a distinct species, much allied to the former, but marked with fewer and larger bands, which are of a browner colour than in the Zebra, and are chiefly disposed on the fore parts of the animal; while the hind parts are rather spotted than striped. The ground colour also of the Quagga is of a ferruginous tinge, especially on the thighs and back. It is of a milder or more docile nature than the Zebra, and is said to have been successfully used by some of the Dutch colonists at the Cape, in the manner of a horse, for draught, &c. It inhabits the same parts of Africa as the Zebra, but is found in separate herds; never associating with that species.



QUAGGA.

CLOVEN-FOOTED HORSE.

Equus Bisulcus. E. pedibus bisulcis. Lin. Syst. Nat. Gmel.
p. 209.

Horse with cloven hoofs.

Le Gnemel, ou Huemel. *Molin Chil. p. 303.*

Huemel. *Pennant Quadr. I. p. 15.*

THE very name of this species seems to imply a kind of equivocal and anomalous being ; one of the most prominent characters of the present genus being a simple or undivided hoof. Indeed if only a single specimen of this animal had been described, we might have hesitated as to admitting it otherwise than as an accidental variety.

The cloven-footed Horse is a native of South America, and was first described by Molina in his Natural History of Chili. In its general appearance, size, colour, and many other particulars, both external and internal, it resembles the Ass ; but has the voice and the ears of a Horse, and has no cross or transverse band over the shoulders. It is very wild, strong, and swift, and is found in the rocky regions of the Andes or Cordilleras of Peru and Chili. The hoofs are divided like those of ruminant animals.

It is singular that this curious species, which seems, as it were, to form a kind of link between the cloven-hoofed and whole-hoofed tribes, should have so long remained unknown to the naturalists of Europe.

HIPPOPOTAMUS. HIPPOPOTAMUS.

Generic Character.

Dentes Primores in utraque maxilla quatuor: superiores per paria, remoti: inferiores prominentes, intermediis longioribus.

Laniarii solitarii, inferiores longissimi oblique truncati, recurvati.

Pedes margine unguiculati.

Front-teeth in each jaw four: the superior ones standing distant, by pairs: the inferior prominent, the two middle ones longest.

Canine-teeth solitary, those of the lower jaw extremely large, long, curved, and obliquely truncated.

Feet armed at the margin with four hoofs.

AMPHIBIOUS HIPPOPOTAMUS.

Hippopotamus Amphibius. *H. pedibus quadrilobis.* Lin. Syst. Nat. p. 101.

Ash-coloured Hippopotamus, with four-lobed feet.

Hippopotamus. Pliny. Gesn. Aldrov. Jonst. &c. &c.

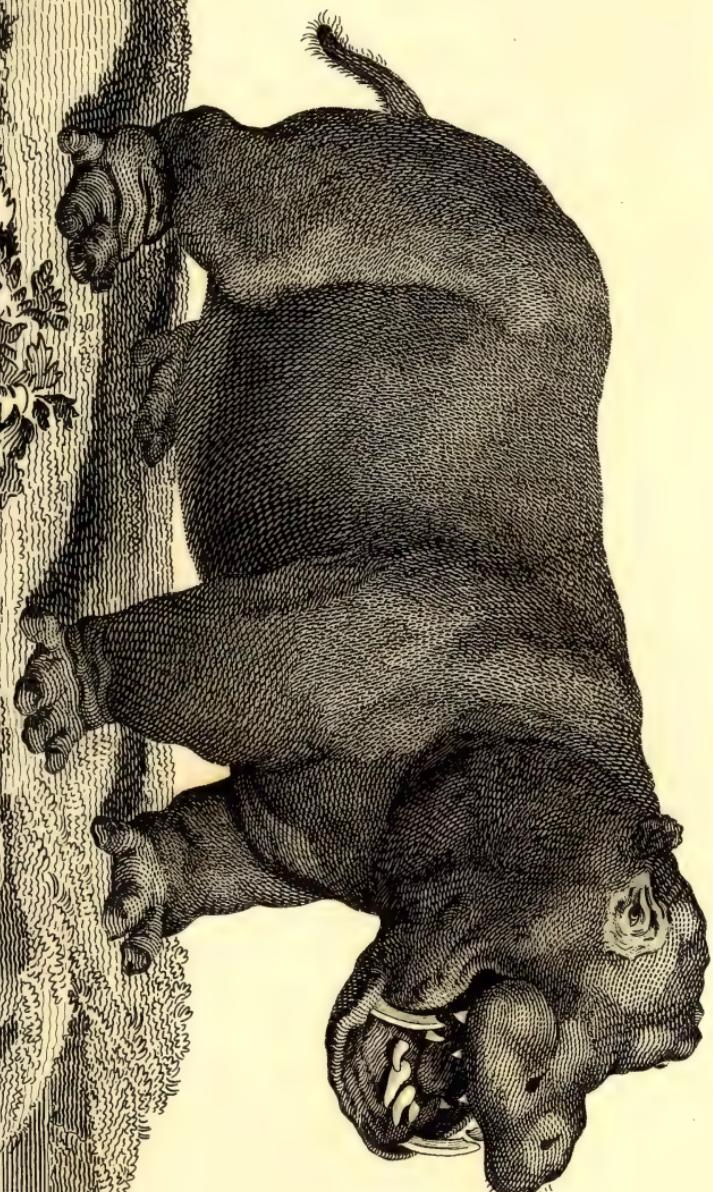
Hippopotamo. Zerenghi monogr.

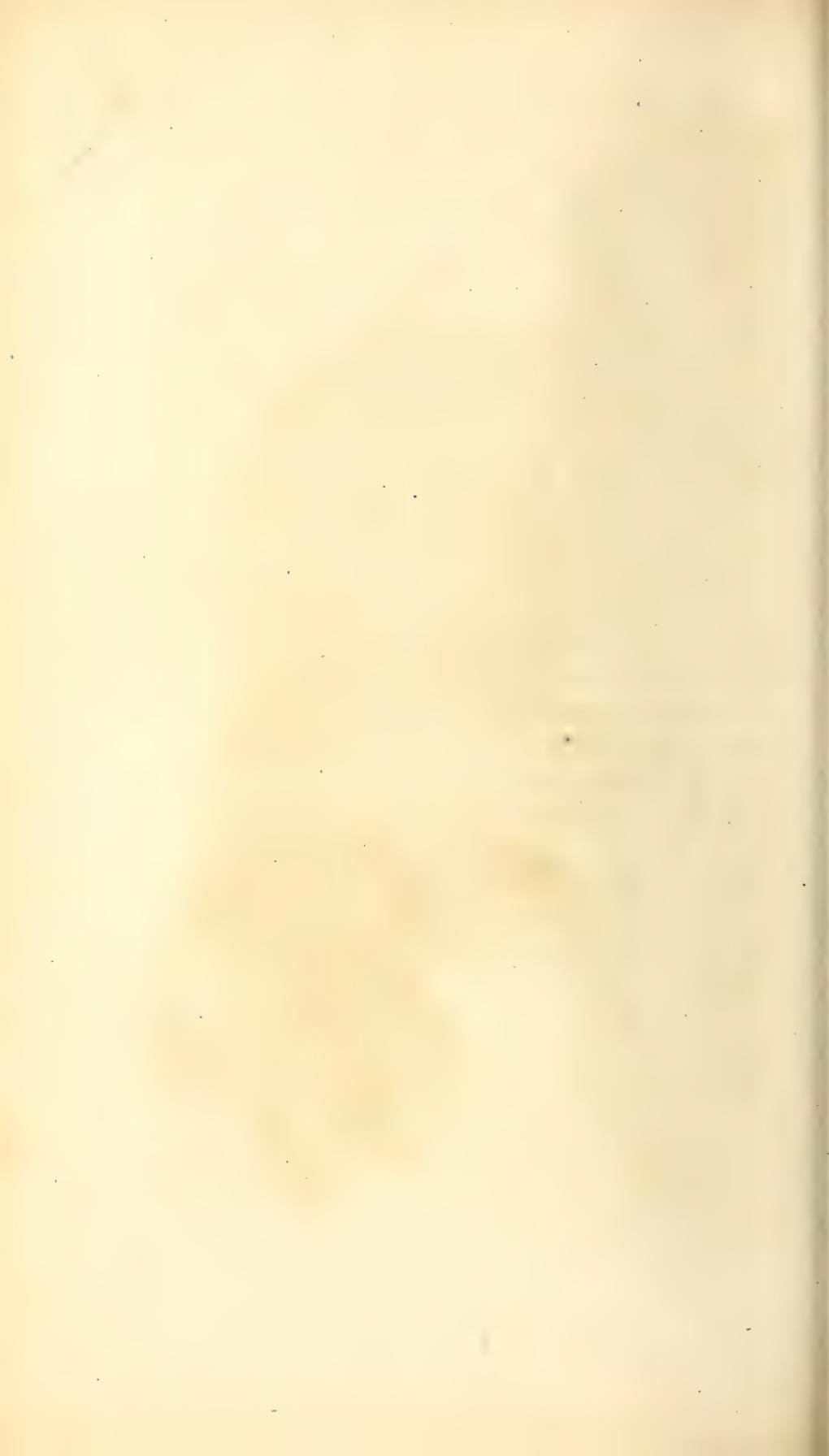
Hippopotame. Buff. 12. p. 22. pl. 3. and Suppl. 6. p. 68. pl. 4. 5.

Hippopotame. Pennant Quadr. 1. p. 167.

THE Hippopotamus is an animal which, from its superior size, and peculiar manner of life, appears, like the Elephant, to have attracted the ob-

HIPPO^TAMUS.





servation of mankind in the earliest ages. It is a native of the warmer regions of the globe, and is chiefly found in the middle parts of Africa, inhabiting large rivers, and especially such as run through countries overshadowed by large forests; walking about at the bottom, and raising itself at intervals to the surface, for the purpose of respiration. By night it quits its watery residence, to graze in the neighbouring plains, devouring great quantities of herbage, and with its vast teeth destroying the more tender kind of trees and other vegetables. It is sometimes seen even in the sea, at some distance from the mouths of rivers; but this is supposed to be merely for the purpose of spatiating more at large, by way of exercise; for it will not even drink salt water, and does not prey on fish, or indeed live on any kind of animal food. The general size of the Hippopotamus seems to be nearly equal to that of the Rhinoceros, and it is sometimes even superior*. Its form is highly uncouth; the body being extremely large, fat, and round; the legs very short and thick; the head very large; the mouth extremely wide, and the teeth of vast strength and size; more particularly the tusks or canine teeth of the lower jaw, which

* Authors vary considerably in their accounts of the size of this animal. It is said that some specimens have measured seventeen feet in length, seven in height, and fifteen in circumference, the head alone measuring three feet and a half. It is added, that twelve oxen have been found necessary to draw one ashore which had been shot in a river. Hasselquist says the hide is a load for a Camel.

are of a curved form, subcylindric, striated in a longitudinal direction, and obliquely truncated or cut off at their extremities: they sometimes measure more than two feet in length, and weigh upwards of six pounds each. Those in the upper jaw are much smaller. The front teeth in the upper jaw are of moderate size: those of the lower jaw are very strong, of a somewhat conical form, slightly pointed, and project forwards almost horizontally: the lips are very thick and broad, and are beset, here and there, with scattered tufts of strong, short bristles: the nostrils are rather small: the eyes small and black: the ears small, slightly pointed, and lined internally with short soft hair: the tail is thick, short, slightly compressed, sparingly covered with hair, and marked by several strong circular wrinkles: the feet are very large, and are divided into four segments or toes, each armed or covered with a strong short hoof. The whole animal is covered with short hair, which is much more thinly set on the under parts than on the upper. The Hippopotamus, when just emerged from the water, appears of a palish brown, or mouse-colour, with a blueish or slate-coloured cast on the upper parts; and the belly is flesh-coloured, the skin appearing through the hair. When perfectly dry, the colour is an obscure brown, without any of the blueish cast. The skin is most excessively tough and strong, except on the belly, where it is considerably softer. This animal is the *Behemoth* of the sacred writings, where it is poetically described as

drinking up a river, and having bones as strong as brass*, and ribs of iron. Its voice is a peculiar kind of interrupted roar, between that of a bull and the braying of an Elephant. When on land, it moves in a somewhat slow and awkward manner, but if pursued, can run with considerable speed, and directly plunging into the water sinks to the bottom, and pursues its progress beneath. It is observed to be extremely cautious of making its appearance by day; especially in such places as are much frequented by mankind; scarcely lifting its nose above the surface while breathing; but is fearless in rivers which run through unfrequented regions; where it is occasionally seen to rush out of the water with sudden impetuosity, trampling down every thing in its way; and at such times is, of course, highly dangerous. It is, however, naturally of a harmless disposition; not attacking other animals, but merely committing havoc in plantations of maize, rice, sugar-canies, &c. and destroying the roots of trees, by loosening them with its vast teeth. It is capable, notwithstanding its great bulk, of swimming very swiftly. Sometimes Hippopotami are seen going in herds, or companies, to the distance of some miles from the bank of a river, in quest of food. If wounded in the water, they become furious, and are said to attack the boats or canoes from whence the injury proceeded, and either overturn or sink them, by biting out large

* Job. c. 40.

pieces from the bottom. The Hippopotamus sleeps in the small reedy islets which are found here and there in the rivers it frequents. In such spots it also brings forth its young ; having only one at a birth, which it nurses with great care for a considerable time. The young is capable of being tamed, and we are assured by Belon that he saw one so gentle as to shew no inclination to escape, or to do any kind of mischief when let out of the stable in which it was kept.

These animals are said to be most successfully taken by preparing pitfalls for them, of large size, near the rivers. They are also occasionally shot, or killed with harpoons. Their flesh is reckoned good by the Africans, and the fat is said to be a fine kind of lard. But it is chiefly on account of the teeth, and more particularly of the tusks, that this animal is killed ; their hardness being superior to that of ivory, at the same time that they are not so subject to become yellow ; for which reason they are much used by the dentists. The skin, from its great thickness and strength, when dried, is used by the African nations for bucklers or shields, and is said to be proof against the stroke of a bullet ; and indeed the living animal, if shot at any where but on the head or the belly, is scarcely vulnerable ; the tough skin causing a bullet to glance from its surface.

The Hippopotamus was known to the ancient Romans, and we are told by Pliny that *Scaurus* treated the people, during his ædileship, with the

sight of four crocodiles, and one Hippopotamus. They were exhibited in a temporary lake prepared for the purpose. Augustus is also said to have exhibited one on his triumph over Cleopatra. The animal, however, was not so far noticed as to have been properly described by the ancients; neither Aristotle nor Pliny giving accurate accounts of it; nor was it till about the beginning of the seventeenth century that it could be said to be justly described. At that period Zerenghi, an Italian surgeon, printed at Naples a tolerably accurate description, accompanied by a figure from the dried skin. The same figure is also repeated in Aldrovandus, &c. It is but lately that the full history of the animal has been known, and that accurate and satisfactory representations of it have been published; and this has been chiefly owing to the laudable and zealous efforts of Dr. Sparmann, Colonel Gordon, Mr. Masson, and others, in examining the living animal in its native regions, and by their observations contributing to complete the descriptions of naturalists.

The largest female Hippopotamus killed by Colonel Gordon was about eleven feet long, and the largest male, which always exceeds the female in size, about eleven feet eight inches. Mr. Bruce, however, speaks of Hippopotami in the lake *Tzana* of more than twenty feet long.

The Hippopotamus has only a single stomach, and does not ruminate: the stomach, however,

has certain cells and divisions, analogous, in some degree, to those of the Camel.

Mons. Sonnini thinks it not improbable that there may in reality exist two species of Hippopotamus ; one of which confines itself entirely to rivers and fresh waters, and the other to the sea.



TAPIR.

TAPIR, TAPIR.

Generic Character.

<i>Dentes Primores</i> in utraque maxilla decem?	<i>Front-teeth</i> in both jaws ten?
<i>Laniarii*</i> solitarii, incurvati.	<i>Canine-teeth</i> in both jaws single, incurvated.
<i>Molares</i> utrinque quinque, latissimi.	<i>Grinders</i> in both jaws five on each side, very broad.
<i>Pedes</i> unguis tribus, anticis unguia succenturiata.	<i>Feet</i> with three hoofs, and a false hoof on the fore-feet.

AMERICAN TAPIR.

Tapir Americanus. *Lin. Syst. Nat. Gmel.* p. 216.

Brown Tapir, with lengthened snout.

Hippopotamus terrestris. *H. pedibus posticis trisulcis.* *Lin. Syst. Nat. edit.* 10. p. 74.

Danta. *Nieremb. Hist. Nat.* p. 187. *Jonst. Quadr.* p. 216.

Anta. *Marcgr. Bras.* p. 229.

Sus aquaticus multisulcus. *Barr. Fr. Equin.* p. 160.

Long-nosed Tapiir. *Pennant Quadr.* 1. p. 163.

Le Tapir. *Buff.* 11. p. 444. *pl.* 43. *and Suppl.* 6. *p.* 1. *pl.* 1.

THE Tapir, with respect to the size of its body, may be considered as the largest of all the native

* In the Gmelinian edition of the *Systema Naturæ*, the generic characters of this animal are somewhat differently given; the canine-teeth being said to be wanting; but I think we may depend on the description of the teeth by Mons. Bajon, published in the *Memoirs of the French Academy*.

quadrupeds of South America, except the lately discovered *Equus bisulcus* of Molina. When full grown it is nearly equal to a heifer. In its general form it bears some distant resemblance to the Hippopotamus, and in the earlier editions of the *Systema Naturæ* was ranked by Linnæus in that genus, under the title of *Hippopotamus terrestris*. By others it has been considered as more allied to the Hog, and has been called *Sus quaticus multisulcus*, or Water Hog with fingered hoof. But, in reality, the Tapir cannot properly be associated, otherwise than by a distant general alliance, with any other quadruped, and forms a peculiar genus. It is of a gregarious nature, and inhabits the woods and rivers of the eastern parts of South America; occurring from the isthmus of Darien to the river Amazons; feeding chiefly by night, and eating sugar-canæs, grasses, and various kinds of fruit. Its colour is an obscure brown, the skin itself being of that cast, and covered sparingly with somewhat short hair: the young animal is said to be commonly spotted with white. The male is distinguished by a kind of short proboscis or trunk, formed by the prolongation of the upper lip to some distance beyond the lower: this part is extensile, wrinkled at the sides, and in some degree resembles that of the Elephant on a smaller scale, though not of the same tubular structure: the neck is very short, and furnished above with a rising mane: the body is thick and heavy; the back much arched; the legs short; the fore-feet divided into

four toes with pointed hoofs; the hind into three only: the tail is very short, thickish, and pointed. The female is said to be destitute of the proboscis*.

In its manners this animal is perfectly harmless; endeavouring merely to save itself by flight when pursued, plunging into some river, if at hand, and swimming with great readiness, and even continuing for a considerable time under water, in the manner of the Hippopotamus. The young is easily tamed, and may be rendered domestic, as is said to be the case in some parts of Guiana. In feeding the Tapir makes use of the trunk in the same manner as the Rhinoceros of its upper lip, to grasp the stems of plants, leaves, &c. Its most common attitude, when at rest, is sitting on its rump, in the manner of a dog.

The Tapir has been occasionally imported alive into Europe. The flesh is considered by the South Americans as a wholesome food, though not very pleasant or delicate, and the skin serves for various purposes where a strong leather is required: the Indians make shields of it, which are said to be so hard that an arrow cannot pierce them. This animal sleeps much by day in the retired parts of the woods, and is shot by the Indians with poisoned arrows. When attacked by dogs, it is said to make a very vigorous resistance. Its voice is

* It is thus described and figured by Mr. Allamand, but Mons. Sonnini, in his edition of Buffon, is inclined to doubt this circumstance.

a kind of whistle, which is easily imitated, and thus the animal is often deceived and trepanned. It is rather slow in its motions, and of a somewhat inactive disposition.

The Tapir produces but one young at a birth, of which it is extremely careful; leading it early to the water, in order to instruct it in swimming, &c.

Mons. Bajon, a surgeon at Cayenne, has communicated some very good observations on this animal to the French Academy of Sciences for the year 1774, which are inserted into the sixth supplemental volume of the Count de Buffon's Natural History.

"The figure of the Tapir," says Mons. Bajon, "bears some general resemblance to that of a Hog; but he is of the height of a small mule; having an extremely thick body, and short legs. He is covered with hair of a longer kind than the horse or ass, but not so long nor thick as that of a hog. His mane, which is strait, is but little longer than the rest of the hair, and reaches from the top of the head to the shoulders: the head is large and long; the eyes very small and black: the ears short, and somewhat like those of a hog. He is provided with a trunk on the upper lip of near a foot long, the movements of which are extremely supple, and in which resides the organ of smell, as in the Elephant, and which he extends in order to grasp fruits, &c. The two nostrils part the end of the trunk. The tail is only two inches long, and is nearly naked. The hair of the body

is of a somewhat deep brown ; the limbs short and thick ; the feet very large, and rather rounded : the fore feet have four toes, and the hind three ; all the toes are covered with a hard, thick hoof, or horn. Though the head is very large it contains but a very small brain : the jaws are much elongated, and furnished, in general, with forty teeth ; but sometimes there are more, and sometimes fewer. The incisors are sharp-edged, and are the teeth which vary as to number. After the incisors we find a canine tooth on each side, both above and below, which have a good deal of resemblance to those of a Boar : we then find a small space or interval without teeth ; and then follow the grinders, which are very large, with very broad surfaces."

" On opening this animal," says M. Bajon, " the first thing that struck me was, that it was a ruminating animal. Though the feet and teeth have no analogy with those of other ruminating animals, yet the Tapir or Maipouris has three receptacles or stomachs, which are commonly full ; and especially the first, which is filled like a balloon. This stomach answers to the first stomach of an Ox, but here the cancellated or honey-comb part is not distinct, but the two parts form one cavity : the second or next stomach is the plaited or laminated one, which is also very considerable, and much resembles that of an Ox ; with this difference, that the laminæ or plaits are much smaller, and the coats much thinner : lastly, the third stomach is the least, and the thinnest, and has

only simple rugæ in its interior, and I have almost constantly found it full of completely digested aliment. The intestines are not very large, but are very long, and the scybala resemble those of a horse."

This description of the interior parts of the Tapir is however declared by the Count de Buffon to be erroneous in a very important particular; and as forming an interesting subject of comparative anatomy, I shall here give the general tenor of his observations.

"I am obliged," says the Count de Buffon, "to contradict a part of this account of Mons. Bajon, and to affirm that the Tapir or Maipouri is not a ruminant animal. We had lately here a living Tapir which bore its voyage very well, and was stationed near Paris; but which happened to die not long after. Of this event I had timely notice, and, accompanied by Mons. Mertrud, a very able surgeon, I requested him to open the animal, and examine its interior structure; an examination for which he was perfectly well qualified, having, under the inspection of Mons. Daubenton, dissected most of the animals described in the course of my work; and who joins to a perfect knowledge of anatomy, the highest degree of dexterity in his operations. This dissection was made in my presence, and the results were drawn up by Mons. Daubenton the younger: Mons. de Seve, my draughtsman, was also present. Instead of three stomachs, as described by Mons. Bajon, we found only one; the size of

which was indeed very large, and straitened or contracted in two places, but was still a single viscus, a simple uniform stomach, opening into the duodenum, and not consisting of three distinct and separate stomachs, as represented in M. Bajon's account. Yet it is not astonishing that he should have fallen into this error, since one of the most celebrated anatomists in Europe, Dr. Tyson, of the Royal Society of London, fell into a similar error in dissecting the Peccari or Tajassu of America, of which he has yet given an excellent description in the Philosophical Transactions. Tyson assures us, as M. Bajon does with respect to the Tapir, that the Peccari has three stomachs, though it really has but one, parted a little, like that of the Tapir, by two strictures or contractions, which seem, at first, to indicate three stomachs. It is therefore certain that the Tapir has only one stomach, and that it is not a ruminating animal; and accordingly that now under consideration was never seen to ruminate during the time of its living here; and its keepers fed it with bread, grain, &c. This mistake of M. Bajon does not prevent us from acknowledging that his memoir contains many excellent observations and remarks. The female, he observes, is always smaller than the male, and has a weaker or less piercing voice. One of the females which he dissected was six French feet in length, and appeared never to have produced young; its teats were two in number, and resembled those of the ass. The Tapir is far from deserving the name of an amphi-

bious animal, being continually on the surface of the ground, near the sides of hills, and in dry places; and if it occasionally frequents marshy ground, it is chiefly in quest of sustenance, and because it finds there a greater quantity of vegetables than on more elevated spots: but as it daubs itself much, during its wanderings in such places, it goes every morning and evening in search of some river or lake, in which it may swim and wash itself. Notwithstanding its clumsy appearance, the Tapir swims extremely well, and dives most readily; but cannot continue longer under water than any other terrestrial quadruped, and is obliged every now and then to put out its trunk in order to respire. When pursued by dogs, it runs, if possible, to some river, which it crosses, and thus eludes their pursuit. It does not eat fish; its only nourishment being vegetables, and especially the young shoots of plants, and such fruit as it finds under the trees. It wanders chiefly by night, except in dull rainy weather, when it appears by day. It is a solitary, gentle, timid animal, flying at the least noise, and having a very quick ear."

M. Bajon kept one of these animals, which had been taken young, and which soon grew tame, and acquired a strong attachment to him, distinguishing him in the midst of many other persons, licking his hands, and following him like a dog; and would often go out alone into the woods, to a great distance, but always returned early in the evening. M. Bajon assures us he saw one which ran tame about the streets at Cayenne; but which,

on being seized, in order to be put on board a vessel, to be brought over to Europe, as soon as it was on board became so unmanageable as not to be confined, breaking the very strong cords with which it was tied; and throwing itself overboard, escaped to shore, and got to a considerable distance from the town. It was supposed to be lost, but returned into the town in the evening. As it was determined to reembark it, great precautions were taken accordingly; but which only succeeded for a certain time; for, during the voyage, about half way between America and France, a storm happening to arise, it became again outrageous, broke its bonds, and rushing out of its place of confinement, committed itself to the ocean, and was never recovered.

From the above history of the Tapir it will sufficiently appear, that, though ranked under a distinct genus, this animal has in some particulars a considerable affinity to the Hippopotamus.

SUS. HOG.

Generic Character.

<i>Dentes Primores superiores quatuor, convergentes.</i>	<i>Front-teeth in the upper jaw four, converging.</i>
<i>Inferiores sex, prominentes.</i>	<i>In the lower jaw six, projecting.</i>
<i>Laniarii superiores duo breviores.</i>	<i>Canine-teeth, or Tusks, in the upper jaw two, rather short.</i>
<i>Inferiores duo exserti.</i>	<i>In the lower jaw two, long, exserted.</i>
<i>Rostrum truncatum, prominentis, mobile.</i>	<i>Snout truncated, prominent, moveable.</i>
<i>Pedes bisulci.</i>	<i>Feet cloven.</i>

THIS genus is in some points of an ambiguous nature, being allied to the Pecora, by its cloven hoofs, and to the Ferae, in some degree, by its teeth; yet differing widely from both in many respects. The internal structure of the feet also approaches to that of the digitated quadrupeds, while that of some other parts is peculiar to this genus alone. It may, therefore, be allowed to form at once a link between the cloven-footed, the whole hoofed, and the digitated quadrupeds.



WILD BOAR.



COMMON HOG.

*Sus Scrofa. S. dorso antice setoso, cauda pilosa. Lin. Syst.
Nat. p. 102.*

Hog with the body bristled in front, and with hairy tail.

Aper. *Gesn. Quadr. 146. Aldr. bisulc. 1013.*

Sus. *Gesn. Quadr. 872. Aldr. bisulc. 937.*

Sanglier, Verrat, Cochon, &c. *Buff. 5. p. 99. pl. 14. 16. 17.*

Common Hog. *Pennant Quadr. 1. p. 140.*

THE Wild Boar, the stock or original of the common domestic Hog, is a native of almost all the temperate parts both of Europe and Asia, and is also found in the upper parts of Africa. It is a stranger to the Arctic regions, and is not indigenous to the British isles.

The Wild Boar inhabits woods, living on various kinds of vegetables, viz. roots, mast, acorns, &c. &c. It also occasionally devours animal food*. It is, in general, considerably smaller than the domestic Hog, and is of a dark brindled grey colour, sometimes blackish ; but when only a year or two old, is of a pale rufous or dull yellowish brown cast ; and when quite young, is marked by alternate dusky and pale stripes disposed longitudinally on each side the body. Between the bristles, next the skin, is a finer or softer hair, of a kind of woolly or curling nature. The snout is somewhat longer in proportion than that of the domestic

* Wild Boars have often been observed devouring horse-flesh left in the woods, and the skin of the Roebuck : the claws of birds have also been found in their stomachs.—*Buffon.*

animal; but the principal difference is in the superior length and size of the tusks, which are often several inches long, and are capable of inflicting the most severe and fatal wounds.

The hunting of the Wild Boar forms one of the amusements of the great in some parts of Germany, Poland, &c. and is a chace of some difficulty and danger; not on account of the swiftness, but the ferocity of the animal.

“Wild Boars,” says Buffon, “which have not passed their third year, are called by the hunters Beasts of Company; because previous to this age they do not separate, but follow their common parent. They never wander alone till they have acquired sufficient strength to resist the attacks of the Wolf. These animals, when they have young, form a kind of flocks, and it is upon this alone that their safety depends. When attacked, the largest and strongest front the enemy, and by pressing all round against the weaker, force them into the centre. Domestic Hogs are also observed to defend themselves in a similar manner. The Wild Boar is hunted with dogs, or killed by surprise, during the night, when the moon shines. As he flies slowly, leaves a strong odor behind him, and defends himself against the dogs, and often wounds them dangerously, fine hunting-dogs are unnecessary, and would have their nose spoiled, and acquire a habit of moving slowly by hunting him. Mastiffs with very little training, are sufficient. The oldest Boars, which are known by the track of their feet, should alone be hunted:

a young Boar of three years old is difficult to be attacked; because he runs very far without stopping; but the old Boars do not run far, allow the dogs to come near, and often stop to repel them. During the day the Boar commonly keeps in his soil, which is in the most sequestered part of the woods, and comes out by night in quest of food; and in summer, when the grain is ripe, it is easy to surprise him among the cultivated fields, which he frequents every night."

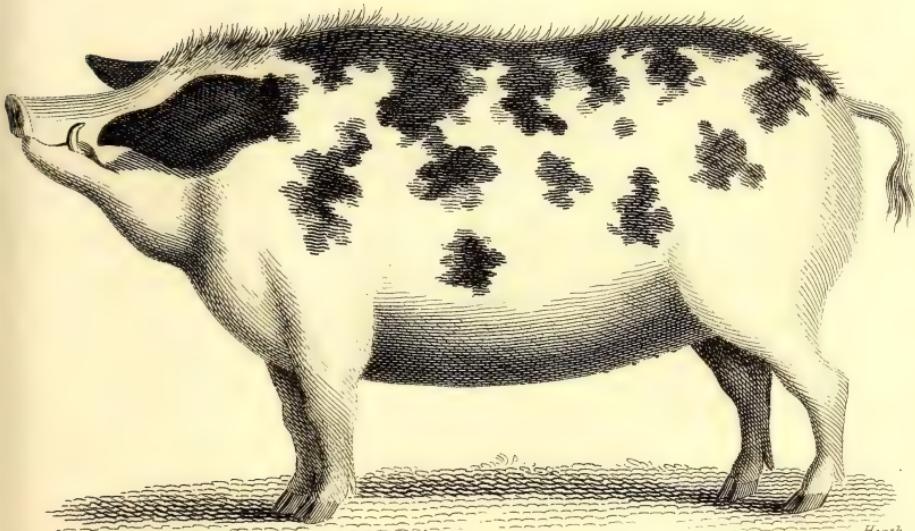
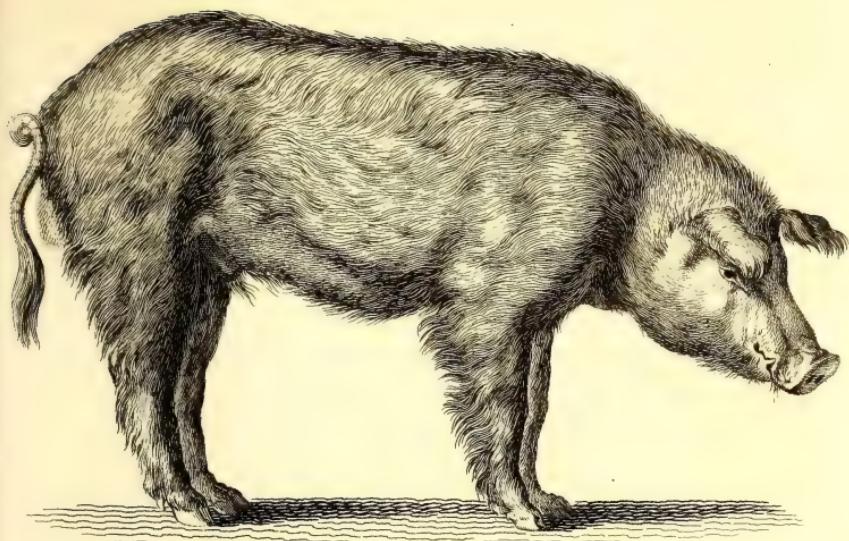
As the Wild Boar advances in age, after the period of three or four years, he becomes less dangerous, on account of the growth of his tusks, which turn up, or make so large a curve or flexure, as often rather to impede than assist his intentions of wounding with them.

According to the French newspapers for the year 1787, a Wild Boar of most extraordinary size was killed in the neighbourhood of Cognac in *Angoumois*, which had escaped a great many times from the hunters, had received many gunshot wounds, and had cost the lives of several dogs and men each time of attacking him. When this animal was at length slain, several bullets are said to have been found between his skin and flesh. Mons. Sonnini, who details this anecdote from the public papers*, observes, that if the relation had not been given by hunters of distinguished order, and too well acquainted with these

* *Journal de Saintonge*; *Journal de Bouillon*, seconde quinzaine d'Avril, 1787, &c. &c.

animals to have made any mistake, we might imagine that this formidable creature, which had long committed its ravages in the park of *Cognac*, belonged to a totally different species. It was of enormous size, with a very long head, a very sharp or pointed snout, and its mouth was armed with teeth of a very singular form. The hairs of the body were white; those of the head yellowish; the neck marked with a black band in form of a cravat, and the ears large and strait; and what appears surprising, considering its size, it was of uncommon swiftness.

To describe particularly the common or *Domestic Hog* would be superfluous. It may be sufficient to observe, that this animal principally differs from the Wild Boar in size, in having smaller tusks, and larger ears, which are also somewhat pendent, and of a more pointed form. In colour it varies very considerably, but the prevailing cast is a dull yellowish white, marked or spotted irregularly with black; sometimes perfectly plain or unspotted, sometimes rufous, and sometimes totally black. The general habits of this creature are well known. Of all quadrupeds the Hog is the most gross in his manners, and has therefore been pretty uniformly considered in all nations as the emblem of impurity. The Jews were strictly enjoined not to eat its flesh; and in many parts of the world, a similar prohibition is still in force; since the Mahometans agree in this respect with the Mosaic institution. In most parts of Europe, on the contrary, it constitutes a



Heath sculp.

COMMON HOG. *Male & Female.*

principal part of the food of mankind. This animal is of a remarkably prolific nature, being sometimes known to produce as many as twenty at a birth.

The Hog was unknown in America, on the discovery of that continent; but since its introduction, appears to flourish there as much as in the old world.

The varieties into which the Hog occasionally runs, chiefly relate, as before observed, to size and colour. That called the Chinese Hog is of a very small size, with a remarkably pendulous belly: its colour is commonly black, and the skin often nearly bare, or less hairy than in the European kinds.

The variety called the Guinea Hog is distinguished by having a smaller head than the common Hog, with long, slender, sharp-pointed ears, and naked tail reaching to the ground. Its colour is rufous, and its hair softer, shorter, and finer than in other kinds. It is said to be most common in Guinea, and is considered by Linnæus as a distinct species, under the title of *Sus Porcus. S. dorso postice setoso, cauda longitudine pedum, umbilico cystifero.*

But the most remarkable variety of the Hog is that in which the hoofs are entire and undivided. This is a mere accidental variety, which is, however, observed to be more common in some countries than in others, and is, according to Linnæus, not unfrequent in the neighbourhood of Upsal in Sweden. It has been noticed by Aristotle and

Pliny, and is said by the former to have been most common in Illyria and Pæonia.

The age of the Domestic Hog is said to extend from fifteen to twenty-five years, or even more.

I have kept these monn[ths] L.L.-

ÆTHIOPIAN HOG.

Sus Æthiopicus. S. sacculo molli sub oculis. Lin. Syst. Nat. Gmel. p. 220.

Hog with wattles beneath the eyes.

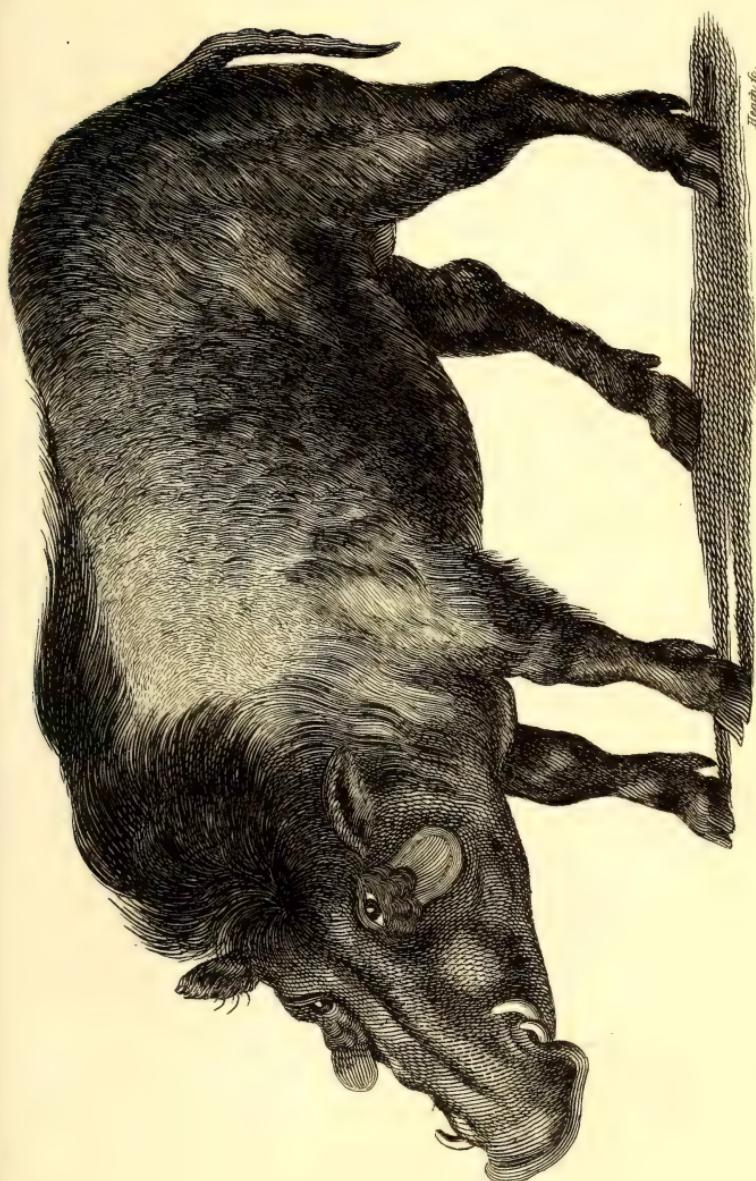
Aper Æthiopicus. Pallas Miscell. Zool. p. 16. t. 2. Spic. Zool. 2. p. 3. t. 11. p. 84. t. 5. f. 7.

Sanglier du Cap Verd. Buff. Suppl. 3. p. 76. pl. 11.

Æthiopian Hog. Pennant Quadr. 1. p. 144.

THIS animal is very much allied in its general appearance to the common Hog, but is distinguished by a pair of large, flat, semicircular lobes or wattles, placed beneath the eyes; the snout is also of a much broader form, and is very strong and callous: the ears are large and very slightly pointed: the tusks in the lower jaw are rather small; but those in the upper jaw are large, sharp, curved, and in the old animal bend upwards in a semicircular manner towards the forehead: there are no fore-teeth; their place being supplied by very hard gums*: the skin of the face, immediately below the eyes, or above the broad lobes before-mentioned, is loose and wrinkled, and on each side the corners of the mouth is a callous

* This at least was the case in the specimen at the Hague.



Teach, &c.

ETHIOPIAN HOG.

No. 1. Engraved by G. Edwards, F.R.S. London.

protuberance. The body is of a strong form; the tail slender, slightly flattened, and thinly covered with scattered hairs. The general colour of the whole animal is a dusky or blackish brown.

This species is a native of the hotter parts of Africa, occurring from Sierra Leona to Congo, and to within about two hundred leagues of the Cape of Good Hope. It also occurs in the island of Madagascar.

It is a fierce and dangerous animal, and is said to reside principally in subterraneous recesses, which it digs with its nose and hoofs. When attacked or pursued, it rushes on its adversary with great force, and strikes, like the common Boar, with its tusks, which are capable of inflicting the most tremendous wounds.

This species has long ago been mentioned by Dampier and other travellers, but was not very distinctly known to European naturalists, till brought over some years ago, in a living state, to the Hague, where it was described by Mr. Allamand, Dr. Pallas, Mr. Vesmaer, &c. and was afterwards introduced into the supplement to the Count de Buffon's Natural History.

CAPE VERD HOG.

Sus Africanus. *S. dentibus primoribus duobus.* Lin. Syst. Nat.

Gmel. p. 220.

Hog with two front teeth.

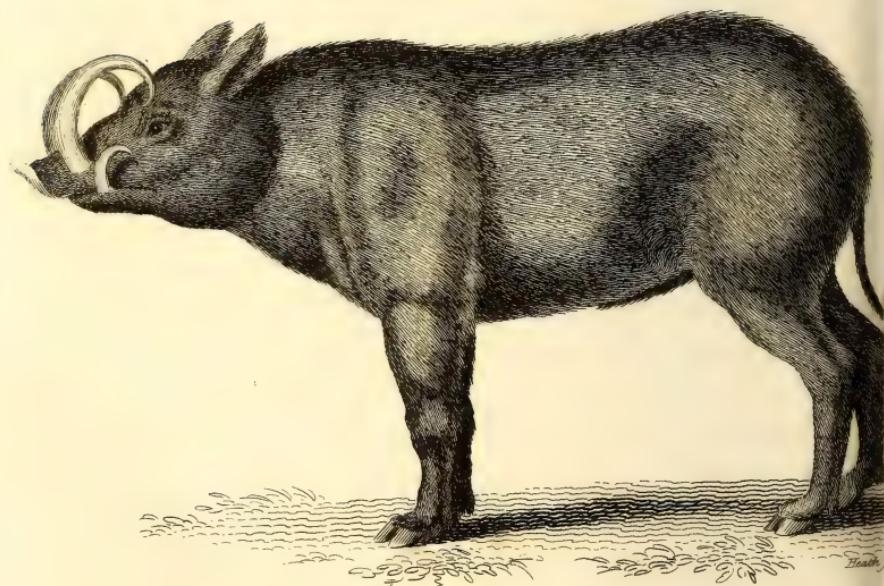
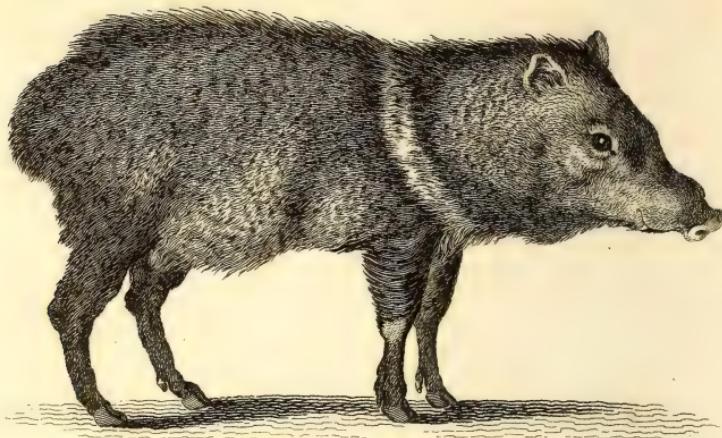
Sanglier de Cap Verd. Buff. 14. p. 409. 15. p. 148.

Cape Verd Hog. Pennant Quadr. 1. p. 146.

THE Cape Verd Hog has been generally confounded with the former animal, from which, however, it appears to differ very considerably; having a head of a much longer and slenderer form, with the upper jaw extending beyond the lower. In the upper jaw are also two cutting teeth, and six in the lower: the tusks are very large and thick, but those of the lower jaw much larger than those of the upper: the ears are rather narrow, pointed, and tufted with long bristles or hairs: the whole body is also covered with long, weak, or fine bristles, of which those on the shoulders, belly, and thighs, are much longer than on other parts: the tail is thin, and terminates in a longish tuft. The colour of this animal is a palish brown. Its general size is that of a common Hog, but it is said sometimes to be found far larger. It is a native of Africa, extending from Cape Verd to the Cape of Good Hope.



PECARI.



BABYROUSSA.

BABYROUSSA.

Sus Babyrussa. S. dentibus duobus caninis fronti innatis. Lin.

Syst. Nat. p. 104.

Hog with the two upper tusks growing from the lower part of the front.

Porcus Indicus Babyroussa dictus. Ray. Quadr. p. 96.

Horned Hog. Grew. Mus. Reg. Soc. p. 27. pl. 1.

Babiroussa. Buff. 12. p. 379. and Suppl. 3. p. 19. pl. 12.

Baby-Roussa. Pennant Quadr. 1. p. 148.

THE Babyroussa is nearly of the size of a common Hog, but of a somewhat longer form, and with more slender limbs, and is covered, instead of bristles, with fine, short, and somewhat woolly hair, of a deep brown or blackish colour, interspersed with a few bristles on the upper and hinder part of the back. It is also distinguished by the very extraordinary position and form of the upper tusks, which, instead of being situated internally on the edge of the jaw, as in other animals, are placed externally, perforating the skin of the snout, and turning upwards toward the forehead, and as the animal advances in age, become so extremely long and curved as to touch the forehead and continue their curvature downwards, by which means they must of necessity lose their power as offensive weapons, which they probably possess in the younger animal: the tusks of the lower jaw are formed as in the rest of the genus, and are also very long, sharp, and curved; but not of equal magnitude with those of the upper. The upper tusks are of a fine hard grain, like that of

ivory : the eyes are small ; the ears somewhat erect, and pointed : the tail rather long, slender, and tufted at the end with long hairs.

The Babyroussa is a gregarious animal, and is found in large herds in many parts of Java, Amboina, and some other Indian islands. Their food is entirely of a vegetable nature, and they often feed on the leaves of trees. When sleeping or resting themselves in a standing posture, they are said often to hook or support themselves by placing the upper tusks across the lower branches of the trees. When pursued they will often plunge into a river, or even into the sea, if near, and can swim with great vigour and facility, and to a vast distance. The voice of the Babyroussa is said to resemble that of the common Hog, but it occasionally utters also a strong or loud growling note. It is sometimes tamed by the inhabitants of the Indian islands, and the flesh is considered as a wholesome food.

PECARY.

Sus Tajassu. *S. dorso cystifero, cauda nulla.* Lin. Syst. Nat.

p. 103.

Tailless Hog, with a glandular orifice on the back.

Sues quibus umbilicus in dorso. Aldr. bisulc. p. 939.

Tajaçu. Marcgr. Bras. p. 229. Pis. Ind. p. 98. Tyson Act.

Ang. n. 153. p. 359. Raj. Quadr. 97.

Pecari, ou Tajaçu. Buff. 10. p. 21. pl. 3, 4.

Mexican Hog. Pennant Quadr. 1. p. 147.

THE Pecary is the only animal of this genus that is a native of the new world, where it is chiefly found in the hottest regions. Its size is considerably smaller than that of a common Hog, and it is of a short compact form. The whole animal is thickly covered, on the upper parts, with very strong, dark-brown or blackish bristles, each marked by several yellowish-white rings; so that the colour of the whole appears mottled with minute freckles or specks, and round the neck is generally a whitish band or collar. The head is rather large; the snout long; the ears short and upright; the belly nearly naked: there is no tail, and at the lower part of the back, or at some little distance beyond the rump, is a glandular orifice surrounded by strong bristles in a somewhat radiated direction. From the orifice exudes a strong-scented fluid, and this part has been vulgarly supposed to be the navel of the animal: the tusks in this species are not very large.

The Pecary is a gregarious animal, and in its wild state is fierce and dangerous; sometimes at-

tacking the hunters with great vigour, and often destroying the dogs which are employed in its pursuit. It feeds not only on vegetable substances, but occasionally on animals of various kinds, and is particularly an enemy to snakes and other reptiles ; attacking and destroying even the rattle-snake, without the least dread or inconvenience, and dexterously skinning it, by holding it between its feet, while it performs that operation with its teeth. It is also remarkable that the common Hog, when translated to America, will attack and destroy the rattle-snake.

The Pecary is considered as an agreeable food ; but the dorsal gland must be cut away as soon as the animal is killed ; otherwise the whole flesh would be infected with an unpleasant flavour. Dr. Tyson has given an elaborate anatomical description of this species in the Philosophical Transactions ; but, as has been already observed, under the article *Tapir*, appears to have entertained an erroneous idea relative to the structure of the stomach.

According to Mons. de la Borde, a correspondent of the Count de Buffon, there are two distinct races of the Pecary, one of which differs in being of smaller size, and of a lighter or more ferruginous colour.

ORDER

C E T E.



W H A L E S,

OR

FISH-FORMED MAMMALIA.

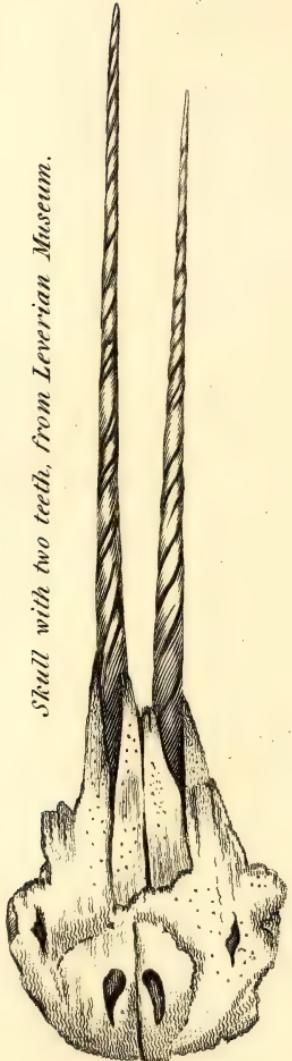
THE Cetaceous Animals, or Whales, however nearly approximated to Fishes by external form, and residence in the waters, are in reality to be considered as aquatic Mammalia; for though from their general shape, and seeming want of feet, they appear, at first view, widely removed from that class, yet we find on examination that their whole internal structure resembles that of other Mammalia, and that their skeleton is formed on the same plan; differing only in the want of hind legs, the peculiar structure of the tail supplying that defect, being extremely strong and tendinous, and slightly divided into two horizontal lobes, but not furnished with internal bones.

Their lungs, intestines, &c. are formed on the same plan as in quadrupeds. They have also warm blood, and, like other Mammalia, suckle

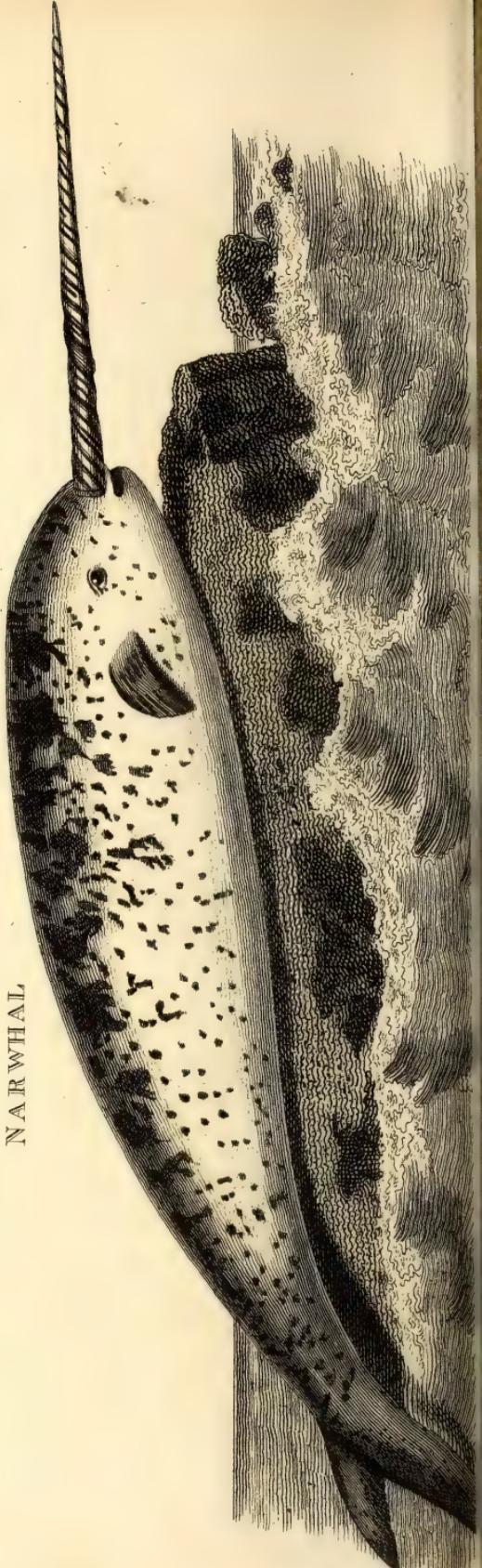
their young. It is therefore unnecessary to add, that their true arrangement must be in the same class; but so strongly is the vulgar or popular idea respecting these animals impressed on the mind, that to this hour they are considered as Fishes by the mass of mankind; who, not having either time or inclination to become scientifically acquainted with the objects of creation, find some difficulty in conceiving how a Whale can be any thing but a fish. It should also be added, that in compliance with this popular prejudice, even Willoughby was induced to admit the Whales into his Ichthyology, Mr. Pennant to exclude them from his work on quadrupeds, and still more lately, Dr. Bloch to insert the Porpoise in his History of Fishes.

Much confusion and inaccuracy has prevailed with respect to the exact determination of the species in this tribe, and it is chiefly to the exertions of modern naturalists and physiologists that we owe our principal knowledge of the subject: the descriptions given by the ancient writers being often very vague and unsatisfactory. The excellent observations of the late Mr. Hunter, published in the Philosophical Transactions, have contributed much to the anatomical history of Whales; while the more exact discrimination of the species has been chiefly owing to Linnaeus, Fabricius, Pallas, Schreber, &c.

Skull with two teeth, from Leverian Museum.



NARWHAL,



MONODON. NARWHAL.

Generic Character.

Dens in maxilla superiore, exsertus, prælongus, rectus, spiralis. || *Tooth* projecting from the upper jaw, very long, strait, spiral.*

Fistula respiratoria in vertice. || *Spiracle on the head.*

UNICORN NARWHAL.

Monodon Monoceros. *M. dente cornuformi spirali, rarius dupli, recto, prælongo, exerto in maxilla superiore.* Fab. Faun. Groenland. p. 29.

Narwhal with very long, strait, spiral, horn-like tooth (sometimes two) in the upper jaw.

Monodon Monoceros. Lin. Syst. Nat. p. 105.

Unicornu marinum. Mus. Worm. p. 282, 283.

Narwhal. Klein. M. pisc. 2. p. 18.

THE Narwhal is a native of the northern seas, where it is sometimes seen of the length of more

* There are sometimes two teeth; but as the animal is generally found with one only, and as the generic name *Monodon* is given from that very circumstance, I have taken the liberty (in order to avoid so palpable an absurdity) to alter the generic character.

than twenty feet from the mouth to the tail; and is at once distinguishable from every other kind of Whale by its very long, horn-like tooth, which is perfectly strait, of a white or yellowish-white colour, spirally wreathed throughout its whole length, and gradually tapers to a sharp point. It measures from six to nine or ten feet in length, and proceeds from a socket on one side of the upper jaw, having a large cavity at its base or root, running through the greater part of the whole length. In the young animals, and occasionally even in the full grown ones, more especially in the males, there are two of these teeth, sometimes nearly of equal length, and sometimes very unequal in this respect: they are seated very close to each other at the base, and as their direction is nearly in a strait line, they diverge but little in their progress towards the extremities. The Narwhal is however far more frequently found with only a single tooth, the socket of the other being either closed, or but obscurely visible, and now and then the appearance of a second tooth in an extremely small state, or just beginning to emerge, is perceptible; as if intended by Nature to supply the place of the other, in case of its being broken or cast. The head of the Narwhal is short, and convex above; the mouth small; the spiracle or breathing-hole duplicated within; the tongue long; the pectoral fins small; the back finless, widish, convex, becoming gradually acuminate towards the tail, which, as in other Whales, is horizontal. The

general form of the animal is rather long than thick in proportion to its size. The colour, when young, is said to be nearly black, but lighter on the belly; but as the animal advances in age, it becomes marbled or variegated with black and white on the back and sides, while the belly is nearly white. The skin is smooth, and there is a considerable depth of oil or blubber beneath it.

The Narwhal chiefly inhabits the northern parts of Davis's Straights. Its food is said to consist of the smaller kind of flat-fish, as well as of *Actiniæ*, *Medusæ*, and many other marine animals. It is principally seen in the small open or unfrozen spots towards the coasts of the northern seas. To such places it resorts in multitudes, for the convenience of breathing, while at the same time it is sure of finding near the shores a due supply of food, and is very rarely seen in the open sea. It is taken by means of harpoons, and its flesh is eaten by the Greenlanders, both raw, boiled, and dried: the intestines and oil are also used as a food; the tendons make a good thread, and the teeth serve the purpose of hunting-horns as well as the more important ones of building tents and houses: but before this animal became distinctly known to the naturalists of Europe, they were held in high estimation as the supposed horns of unicorns. Various medical virtues were also attributed to them, and they were even numbered among the articles of regal magnificence. A throne made for the Danish monarchs is said to be still pre-

served in the castle of Rosenberg, composed entirely of Narwhal's teeth; the material being anciently considered as more valuable than gold.

A specimen of this Whale, measuring about eighteen feet, exclusive of the horn or tooth, was some time ago stranded on the coast of Lincolnshire, at no great distance from Boston, and was said to have been taken alive, so that the Narwhal might now be numbered among the animalia rariora of the British Zoology. *This is raw L.C.*

SPURIOUS NARWHAL.

Monodon Spurius. *M. dentibus duobus minutis in maxilla superiore, dorso pinnato. Fab. Faun. Groenland. p. 31.*

Narwhal with pinnated back, and two small teeth in the upper jaw.

A SPECIES most allied to the Narwhal, but not perhaps, strictly speaking, of the same genus: no teeth in the mouth, but from the extremity of the upper mandible project two minute, conic, obtuse teeth, a little curved at the tips, weak, and not above an inch long: body elongated, cylindric, black. Besides the pectoral fins, and horizontal tail, is also a minute dorsal fin. It must be numbered among the rarest of the Whales. Its flesh and oil are considered as very purgative: inhabits the main ocean, seldom coming towards shore: feeds on the loligo: has a spiracle like other Whales. Both flesh and oil are eaten, but

not without apprehension, for the reason before-mentioned: generally found dead, being very seldom taken living.

The above is the description given by Fabricius, in his *Fauna Groenlandica*, and the animal seems to have been described by no other author.

BALÆNA. MYSTICETE.

Generic Character.

<i>Dentium loco in maxilla superiore laminæ cornæ.</i>	<i>Horny Laminae in the upper jaw in place of teeth.</i>
<i>Fistula respiratoria duplicito externo supra caput.</i>	<i>Spiracle with a double external orifice on the top of the head.</i>

GREAT MYSTICETE.

Balæna Mysticetus. *B. naribus flexuosis in medio capite, dorso impinni.* Lin. Syst. Nat. p. 105.

Mysticete with flexuous spiracles on the middle of the head, and finless back.

Balæna groenlandica. *B. fistula dupli in fronte, maxilla inferiore multo latiore.* Lin. Mus. Ad. Frid. 1. p. 51.

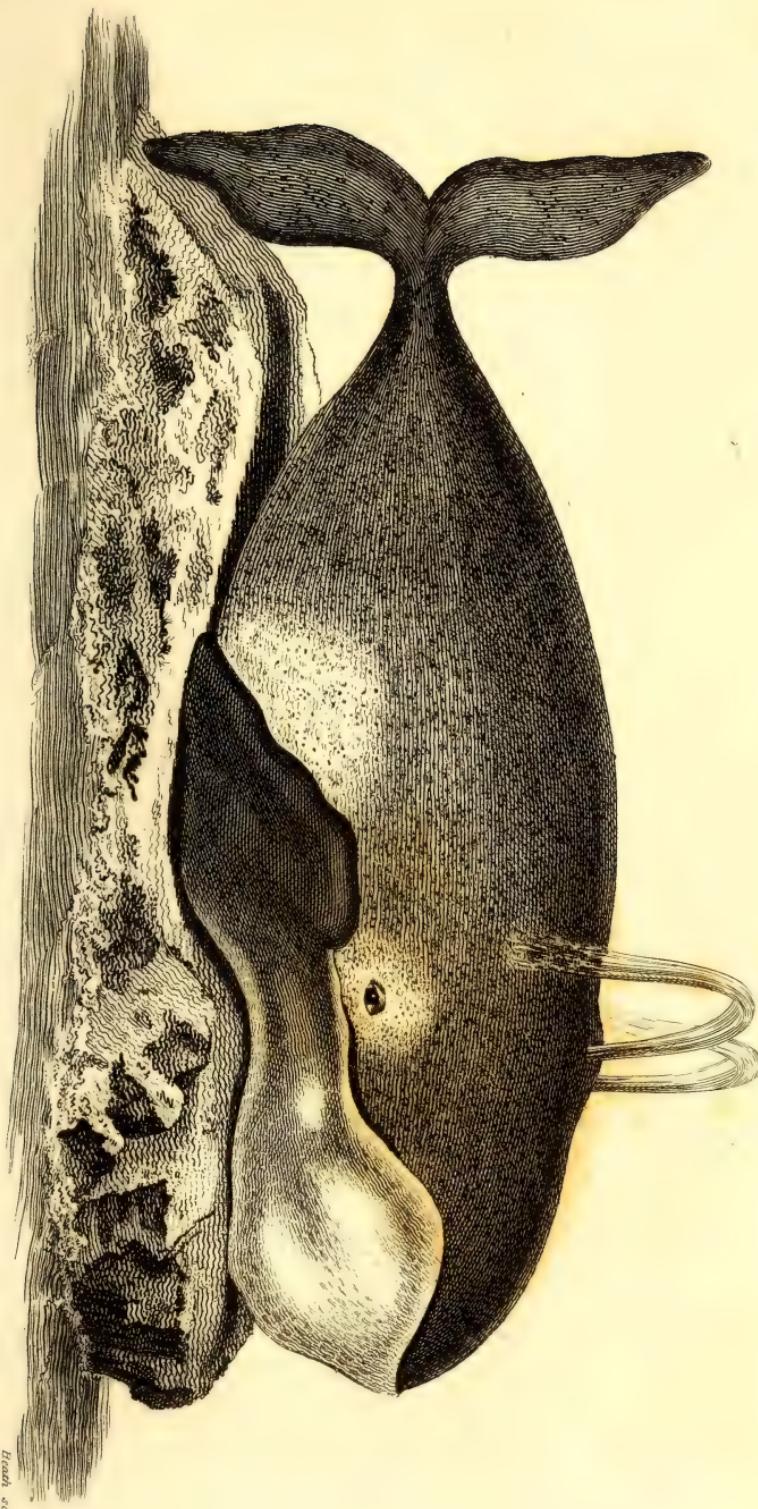
Balæna vera Rondeletii, & Balæna Rondeletii, Gesneri & aliorum. Willoughb. pisc. p. 35. 38.

Wallfisch. Martens Spitzberg. p. 98. t. 9.

Common Whale. Pennant Brit. Zool. 3. p. 16.

Mysticetus, or Great Northern Whale. Nat. Misc. vol. 4. pl. 133.

THIS Whale is, as it were, the chief of the whole tribe, and, unless the Kraken be not a fabulous existence, is the largest of all animals either of land or sea. Before the northern whale-



GREAT MYSTICETE.

fisheries had reduced the number of the species, it was no very uncommon circumstance to find specimens of an hundred feet in length, or even longer. Such however are now very rarely seen, and it is not often that they are found of more than sixty or seventy feet long. In its general appearance this animal is peculiarly uncouth; the head constituting nearly a third of the whole mass: the mouth is of prodigious amplitude; the tongue measuring eighteen or twenty feet in length: the eyes are most disproportionately small: in the upper jaw is a vast number of very long and broad horny laminæ, disposed in regular series along each side: these are popularly known by the name of whalebone: on the top of the head is a double fistula or spout-hole through which the enormous animal discharges water at intervals, causing the appearance of a marine jet d'eau ascending to a vast height in the air. Its common colour is black above and white beneath, but in this circumstance it is known to vary. Its general residence is in the northern seas, where it has long constituted the principal trade of the whale or oil fishery. Its food is supposed to consist chiefly of different kinds of Sepiæ, Medusæ, and other marine Mollusca.

To the above general description of this monster of the deep, I shall annex the account given by that faithful writer Frederick Martens, in his work intitled *A Voyage to Spitzbergen*. I shall however take the liberty to give the narrative a somewhat more connected and regular form than

it bears in the original work. Its honest simplicity and accuracy must apologize for its tediousness.

"The Whale," says Martens, "for whose sake our ships chiefly undertake the voyage to Spitzbergen, differs from other whales in his fins and his mouth, which is without teeth, but instead thereof hath long, black, and somewhat broad horny flakes, all jagged like hairs. His fins are situated at some distance behind the eyes, and are of a bigness proportionable to the animal, covered with a thick black skin, delicately marbled with white or yellow strokes, or as you see in marble trees, houses, or the like things represented; or like the veins in some kinds of wood. In the tail of one of these fishes was marbled very delicately the number 1222, very even and exact, as if painted upon it on purpose. This marbling or variegation of the skin, which resembles parchment or vellum, gives the Whale an incomparable beauty and ornament. When the fins are cut, you find underneath the skin, bones that look like unto a man's hand when it is opened and the fingers expanded. Between these joints there are stiff sinews, which fly up and rebound again if you fling them hard against the ground, as the sinews of a great fish, as of a sturgeon, or of some four-footed beast would do. You may cut pieces of these sinews of the bigness of your head; they squeeze together when thrown on the ground, and so rebound very high, and as swift as an arrow from the string of a long bow. The Whale

hath no other fins but these two, wherewith he steers himself, as a boat is rowed with two oars. The tail doth not stand up, like the tails of fish, but lieth horizontally, as that of the Dolphin, &c. and it is three and a half or four fathoms broad. The head is the third part of the whole animal, and some have it still bigger. On the upper and under lip are short hairs before. The lips are quite plain, somewhat bended like an *S*, and they end underneath the eyes, before the two fins. Above the uppermost bended lip he hath black streaks ; some are darkish brown, and they are crooked as the lips are : the lips are smooth, and quite black, round, like the quarter of a circle. When they draw them together, they lock into one another. Within, on the uppermost lip, is the whalebone, of a brown, black, or yellow colour, with streaks of several colours : the whalebones of some whales are blue, and light blue, which two are reckoned to come from young whales. Just before, on the under lip, is a cavity or hole, which the upper lip fits exactly into, as a knife into a sheath. I do really believe that he draweth in the water that he bloweth out through this hole, and so I have also been informed by seamen. Within his mouth is the whalebone, all hairy as a horse's hair, and it hangs down from both sides, all about his tongue. The whalebone of some Whales is somewhat bended, like a cimeter, and others like a half-moon. The smallest whalebone is before, in his mouth, and behind towards his throat, and the middle-most is the largest and longest, being sometimes

about two or three men's length, from whence may be conjectured how large the animal must be. On one side, all in a row, there are two hundred and fifty pieces of whalebone, and as many on the other; making in all five hundred, and there are still many more, for the cutters let the least of all remain, because they cannot easily come at it to cut it out, on account of the meeting of the two lips, where the space is very narrow. The whalebone is in a flat row, one piece by the other, somewhat bending within, and towards the lips every where like a half-moon. It is broad at the top, where it sticketh fast to the upper lip, every where overgrown with hard white sinews towards the root, so that between two pieces of whalebone you may put your hand. These white sinews are of an agreeable smell, break very easily, and may be boiled and eaten. Where the whalebone is broadest, as underneath by the root, there groweth small whalebone, the other greater, as you see small and large trees one among another in a wood. I believe the small whalebone doth not grow bigger, as one might think that some of the great pieces thereof might come out, and that so this small whalebone might grow up again in the room thereof, or as in children, the hair grows again when cut; but it is not so; for it is from one end to the other of an equal thickness, and full of long jacks, like horses hair. The whalebone is underneath narrow and pointed, and all overgrown with hair, that it may not hurt that which is young; but without the whalebone

hath a cavity, for it is turned just like unto a gutter wherein the water runs, where it lieth the one over the other, like the shields or plates of Crawfish, or the pantiles of an house, that lye one over the other; for else it might easily wound or hurt the under lip.

“ To cut the whalebone out is a particular trade, and abundance of iron tools are used in the process. The lower part of the whale’s mouth is commonly white. The tongue, which is about the size of a great feather-bed, lyeth among the whalebone; being very closely tied to the undermost chap or lip. It is white, with black spots at the edges, and consists of a soft, spungy, fat substance, which cannot easily be cut, being at once tough and yielding; so that it is thrown away by the Whale-catchers for this reason; otherwise they might get five, six, or seven barrels of oil from it. Upon the head is the hoffel, or bump before the eyes and fins; and at the top of it are situated the spout-holes, one on each side, over against each other, shaped like the letter *S*, or the hole on each side a violin. From these holes the Whale bloweth or spouteth the water; fiercest of all when he is wounded, when it sounds like the roaring of the sea in a great storm, or as we hear the wind in very tempestuous weather: it may be heard at a league’s distance, though you cannot see the fish by reason of the thick and foggy air. The head is not round at the top, but somewhat flat, and goes down sloping, like the tiling of a house, to the under lip. The under lip is broader

than any part of the body, and broadest of all in the middle. In a word, the whole fish is shaped like a shoemaker's last, if you look upon it from beneath. Behind the knob or bump, between that and the fins, are placed the eyes, which are not much bigger than those of a bullock, with eyelids and hair like the human eyes. The crystal (crystalline humour) is not much bigger than a pea, clear, and transparent as crystal. The eyes of the Whale are placed very low, almost at the end of the upper lip. Some bring with them from Spitzbergen some bones which they call the ears of the Whale, but this I can say nothing to, because I never saw any; but very well remember, that I have heard that they lie very deep. The Whale doth not hear when he spouts the water, wherefore he is easiest to be struck at that time. His belly and back* are quite red, and underneath the belly they are commonly white; yet some are coal-black. Most of those which I saw were white. They look very beautiful when the sun shines upon them, the small clear waves of the sea that are over him glistening like silver. Some of them are marbled on the back and tail. Where a Whale has been wounded there remaineth always a white scar. I understood from one of our harpooners that he once caught a Whale at Spitzbergen that was white all over. Half white

* I suspect some mistake here; the back being in most of the Whale tribe of a dark colour.

I have myself seen, but one above the rest, which was a female, was a beautiful one: she was all over marbled black and yellow. Those that are black are not all of the same colour; for some are as black as velvet, others coal-black, and others of the colour of a tench. The Whale loseth its beautiful colours when it grows dry; the black becoming brownish, and the white losing its clearness. When they are well, they are as slippery as an Eel; but one may stand upon them, because they are so soft that the flesh giveth way to our weight. The outward skin is thin, like parchment, and is easily pulled off by the hand when the flesh grows hot by the fermentation of the inward parts after the animal's death. The bones of the whale are hard, like those of large four-footed beasts, but porous, like a sponge, and filled with marrow, and when that is consumed out, they will retain a great quantity of water, for the holes are large, like those of an honeycomb. Two great and strong bones hold up the under lip: they lie one against the other, and both together make a figure like a half-moon, but one by itself is like a quarter of a circle. Some of these I have seen lying on the coasts of Spitzbergen about twenty feet long, of a white colour, as if calcined. The flesh of the Whale is coarse and hard, like that of a bull: it is intermixed with many sinews, and is very dry and lean when boiled, because the fat is only between the flesh and skin. If suffered to lie a little, it soon becomes black and tainted. That of the tail boils the tenderest, and is not

quite so dry as that of the body. When we have a mind to eat of a Whale we cut great pieces off before the tail where it is four-square, and boil it like other meat: good beef I prefer far before it, yet rather than be starved I advise to eat Whale's flesh; for none of our men dyed of it, and the Frenchmen did eat it almost daily; flinging it on the tops of their tubs, and letting it lie till it was black; and yet eating it in that condition. The flesh of the Whale, like that of Seals, is alone, or by itself; and the fat at the top thereof between the flesh and skin. The fat is about six inches thick on the back and belly; but I have also seen it a foot thick on the fins, and more than two feet on the under lip; but Whales vary in this respect, like other animals, according to size and health. In the fat are interspersed little sinews, which hold the oil, as a spunge does water, which one may squeeze out: the other strong sinews are chiefly about the tail, where it is thinnest, for with it he turns and winds himself about, as a ship is turned by the rudder; his fins being his oars, and according to his size he rows himself along with them as swiftly as a bird flies, and maketh a long track in the sea, as a great ship doth when under sail; so that it remains divided for a while. Over the fat is, besides the uppermost skin already described, another skin, about an inch thick, proportionable to the size of the Whale. It is coloured according to the colour of the animal: if the Whale be black this is black also: if on the contrary the outward or

parchment-like skin be white or yellow, the thick under skin is of a similar colour. This thick skin is not tough or tenacious, but of a fungous texture, and of no use as an article of trade.

"The food of the Whale is believed to be small sea-snails*, which float, in vast abundance, on the surface of the northern seas. Whether these afford such great nourishment I cannot tell. I have been informed by others that about Hitland a small Whale was caught, which had about a barrel of Herrings in its belly. The middling-sized Whales caught at Spitzbergen afford seventy, eighty, or ninety *cardels* of fat. Our biggest Whale was fifty-three feet long, and his tail three fathom and a half broad. The Whale swims against the wind, like most of this tribe, and indeed as most large fishes do. They are sometimes found diseased and emaciated, having their peculiar disorders like other animals. The breasts of the female resemble those of a Cow, having similar nipples: they are sometimes white, and sometimes speckled with black and blue spots, in the manner of a plover's egg. They are said never to have more than one young at a time."

I must now take the opportunity of repeating what I have advanced in the Naturalist's Miscellany, viz. "It is to be lamented that in the poetical descriptions of various striking scenes in natural history, the epithets by which many objects are distinguished, are, for want of due know-

* A species of *Clio*, the *Clio limacina* of Linnaeus.

ledge of the subject, improperly chosen, and utterly inconsonant with the character of the things intended; by which means the description, however beautiful in point of language, fails in point of accuracy. This is no where more strikingly illustrated than in the august lines of Milton, in which the description of a sleeping whale is injured by an epithet of all others least according with the nature of the animal.

‘That sea-beast

*perhaps he
will know no
said not Shales
were scaly, saw
on covered with
parasitic barniz
old & old*

Leviathan, which God of all his works
Created hugest that swim th' ocean stream :
Him haply slumb'ring on the Norway foam,
The pilot of some small night-founder'd skiff
Deeming some island, oft, as seamen tell,
With fixed anchor in his scaly rind,
Moors by his side under the lee, while night
Invests the sea, and wished morn delays.'

“None of the cetaceous tribe are furnished with scales, or any thing analogous to them. It must be acknowledged however that this observation may appear in no small degree hypercritical, and that Milton by the expression of *scaly rind* might only mean rough or scaly in the same sense that those epithets are applied to the bark of a tree or any irregular surface. There can be little doubt however that real and proper scales were intended by the poet; nor is it difficult to discover the particular circumstance which impressed Milton with this erroneous idea, viz. a figure in the works of Gesner, so injudiciously expressed as

to appear on a cursory view as if coated with large scales, with a vessel near it with harpooners, &c. over which is the observation of sailors often mistaking a whale for an island, and thus endangering themselves by attempting to anchor upon it. As the general learning and extensive reading of our great poet are so well known, it can hardly be doubted that he was conversant with the writings of Gesner, whose work was then the great depository of natural knowledge, and that the figure and description there given left a lasting impression on his mind."

The Whale is taken by being struck with harpoons by several persons who pursue him in boats, arranging themselves according to circumstances, and wounding the animal repeatedly, till faint with loss of blood, he at length expires, and lies floating on the surface. The harpoon is a sharp iron in the form of an arrow head, fixed to a rod, and furnished with a vast length of line of proper strength. The wounded Whale swims away, often drawing both line and boat after him as swift as the wind, spouting the water with violence, and tinging the sea all around with his blood. The noise, says Martens, may be heard as far as a cannon, but after having received several wounds at different intervals, it grows weaker, till at length it resembles that of the wind blowing slightly into an empty vessel. This is a dangerous occupation, and requires great dexterity on the part of the adventurers. A long-boat, according to our author, "he valueth no more than dust, for

he can beat it all in shatters at a blow." The desire of gain however is a sufficient temptation to those who undertake this fishery, and the profits seldom fail to recompence their labours.

Though the chief residence of this and most other Whales is in the polar regions, yet they sometimes stray into more temperate latitudes, and are occasionally seen in very different parts of the ocean from those in which they generally reside.

The Whale is one of those animals which were once considered as royal dishes; and we are informed that in ancient times, whenever one happened to be thrown on the British coast, the King and Queen divided the spoil; the King asserting his right to the head, and her Majesty to the tail*.

FIN-BACKED MYSTICETE.

Balaena Physalus. *B. fistula dupli in medio capite, dorso extremo pinua adiposâ. Lin. Syst. Nat. p. 106.*

Mysticete with double spiracle on the head, and a fatty fin at the lower part of the back.

Balaena tripinnis ventre lœvi. *Bris. Regn. Anim. p. 352. n. 5.*

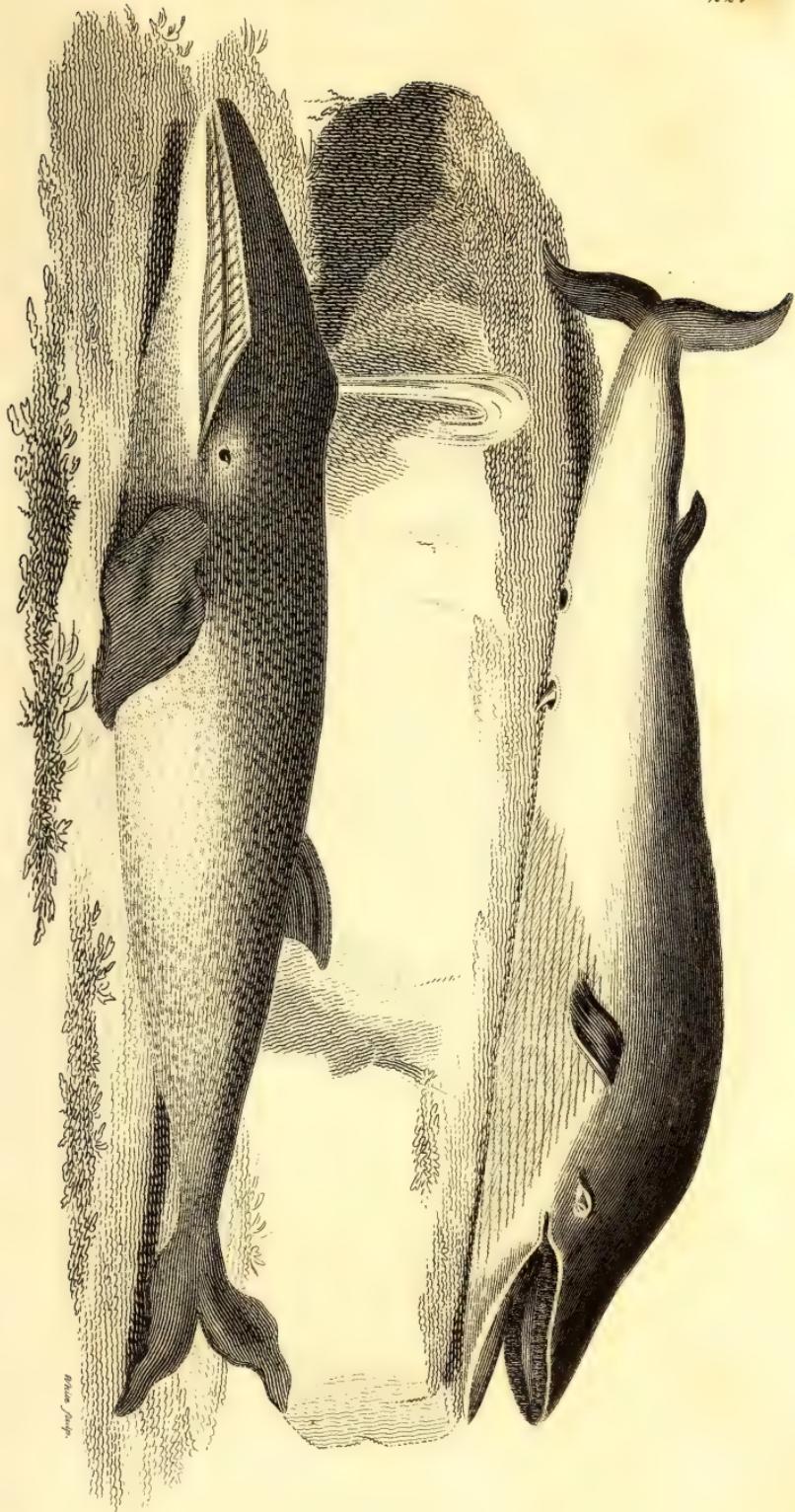
Physalus bellua, s. Physeter. *Gesn. Aquat. p. 851.*

Finnfisch. *Mart. Spitsb. p. 125. t. 2.*

THIS species is of a much more slender form than the preceding, which it equals in length: the head is rather narrow, the mouth very wide,

* Blackst. Comm. 1. c. 4. Brit. Zool. &c.

PIKE-HEADED MYSTICETE.



FIN-BACKED MYSTICETE.

and the lips are marked by a number of oblique wrinkles or plaits in such a manner as to resemble in some degree the appearance of a large twisted rope. The upper jaw is furnished with laminæ of whalebone, on the same plan as in the great whale, but smaller and shorter in proportion, and generally of a blueish colour. The general colour of this species is a dark or blackish olive on the upper parts, and whitish beneath. Martens compares the colour to that of a Tench. On the lower part of the back is situated a small thick or fatty fin, of about three or four feet in length, and of a somewhat sharpened form. This animal swims with greater celerity and vigour than the great whale, and is considered as much more dangerous to attack, exerting such rapid and violent motions as to render the capture extremely difficult, and as the oil which it affords is much less plentiful than in the former species, it is of course less an object of pursuit. It is known to the fishers by the title of Fin-Fish, being easily distinguished by its back fin, as well as by its much more violent blowing and spouting. It inhabits the same seas with the great or common Whale.

PIKE-HEADED MYSTICETE.

Balæna Boops. *B. fistula dupli in rostro, dorso extremo protuberantia cornea.* Lin. Syst. Nat. p. 106. Artedi. Gen. 77. Syn. 107.

Whale with double spiracle on the snout, and a horny protuberance on the hind part of the back.

Balæna tripinnis, ventre rugoso, rostro acuto. Briss. Regn. Anim. p. 355. n. 7.

Jupiterfisch. Anders. Isl. p. 220. Cranz. Groenl. p. 146.

Pike-headed Whale. Pennant Brit. Zool. 1. p. 50. Dale Harw. p. 410. n. 3.

THIS species measures fifty feet or more in length, and is found both in the northern and southern ocean. It is of a moderately slender form, but somewhat thick on the fore parts, and its colour is black above and white beneath: the upper part of the belly is marked by numerous longitudinal plaits or wrinkles, the insides of which are of a red colour. The head is moderately large, and of a gradually tapering form, yet ending in a somewhat broad or obtuse tip. It has a double spiracle or blow-pipe on the head, the holes of which are approximated, and which it can close in such a manner by a common operculum, as to appear single: before the nostrils, on the head, are three rows of circular convexities: the lower jaw is rather narrower than the upper: the eyes are situated beyond the spiracles, on each side the head: the ears consist of very minute apertures behind the eyes: in the upper jaw are very numerous laminæ of whalebone, not

above a foot in length; and in the lower jaw is a cavity to receive them: the tongue is large, fat, wrinkled, and liver-coloured, and from this towards the throat hangs a loose skin like an operculum. The pectoral fins are large, obovate-oblong, entire on the posterior edge, but round-crenated on the anterior. The dorsal fin is of a fatty-cartilaginous substance, and is situated on the hind part of the back, above the vent, and is nearly perpendicular. Behind the dorsal fin runs a carina, or sharp edge, as far as the tail, which is slightly divided into two somewhat pointed lobes. This species lives principally on a small species of Salmon, called the *Salmo arcticus*, as well as on the *Argonauta arctica* and the *Ammodytes Tobianus* or Launce. When in the act of opening its mouth, it dilates the abdominal plaits or furrows, which lie in pairs, and on account of the colour of their internal surface, present, at this juncture, a highly beautiful spectacle; the fore part of the belly appearing as if elegantly striped with red. This species blows less violently than others; and is often observed stationary, as it were, or as if sleeping on the surface, sometimes lying on one side, and sometimes striking out of the water, and flapping itself with its fins, as if to clear them from barnacles, &c. which occasionally adhere to them. It is a very timid animal, and always swims away from the *Physeter Microps* or *High-Finned Cachalot*, which is its great enemy. Its flesh and oil are used like those

of other whales ; and from the skinny flap at the root of the tongue, as well as from the intestines, are prepared windows by the Greenlanders.

BUNCHED MYSTICETE.

Balaena Gibbosa. *B. dorso gibboso, pinna dorsali nulla.* Lin.
Syst. Nat. Gmel. p. 225.

Whale with one or more gibbous excrescences on the back, and without dorsal fin.

Balaena gibbo unico prope caudam. *Klein. M. P. 2. p. 12.*

Balaena gibbis sex, balaena macra. *Klein. M. P. 2. p. 13.*

Knotenfisch oder Knobbelfisch. *Anders. isl. p. 225.* Cranz.
Groenl. p. 146.

THIS species is a native of the northern seas, and is said to be of the same general form with the Great Whale, but of smaller size, and to have the back furnished with one or more tubercles : the variety with a single tubercle is found about the coasts of New England : the other, which has six tubercles along the back, is supposed to occur about the coasts of Greenland ; but neither seem very accurately known : their whalebone is said to be of a pale or whitish colour.

UNDER-JAWED MYSTICETE.

Balæna Musculus. *B. fistula duplice in fronte, maxilla inferiore multo latiore.* Lin. Syst. Nat. p. 226. Arredi. Gen. 78.
Syn. 107.

Whale with double spiracle on the front, and lower jaw much wider than the upper.

Balæna tripinnis, ventre rugoso, rostro rotundo. Briss. Regn. Anim. p. 353. n. 6.

Round-lipped Whale. Pennant Brit. Zool. p. 52.

THIS is a native of the northern seas, and seems much allied to the Pike-headed Mysticete, but grows to a much larger size, having been found, it is said, of the length of seventy-eight feet, measuring thirty-five feet in girth; the head is large; the mouth very wide; the lower lip much broader than the upper, and semicircularly turned at its extremity, while the upper is somewhat sharp or pointed at the tip. The laminæ of whalebone are black, and short in proportion to the size of the animal, the longest not measuring more than three feet; the spiracle is double and placed on the front: the belly is marked by plaits or furrows as in the *Balæna Boops*, and on the lower part of the back is a fatty fin. The colour of this species is black above and white beneath. In the year 1692 a specimen was taken on the coast of Scotland. Its dimensions were as above described; the tongue measured fifteen feet and a half in length, and the two spout-holes on the forehead were of a pyramidal form; the pectoral fins ten feet long, and the tail eighteen feet broad.

ROSTRATED MYSTICETE.

Balæna Rostrata. *B. minima rostro strictiore, dorso pinnato, lambris oris albis.* Fabr. Faun. Groenl. p. 4.

Small Whale, with taper snout and adipose back fin.

Balæna rostrata. *B. ore rostrato, dorsi pinna adiposa.* Lin. Syst. Nat. Gmel. p. 226.

Balæna minima, rostro longissimo et acutissimo. Müll. Zool. Dan. Prodr. p. 7. n. 48.

Rostrated Whale. Naturalist's Miscellany, vol. 9. p. 304.

THIS is by far the smallest as well as the most elegant in its appearance of all the Mysticetes or Whalebone Whales, being rarely known to attain the length of twenty-five feet. The head, upper part of the back, fins, and tail, are of a dark or blueish-brown, but the sides and abdomen are of a beautiful white, with a very slight tinge of pale rose or flesh-colour, and are marked for more than half the length of the animal by very numerous longitudinal plaits or furrows: the eyes are small, as is also the head, and the snout is much more elongated than in any other species, gradually tapering to the extremity, which is slightly pointed: the back fin is small, and situated at no great distance from the tail: the pectoral fins are small and narrow, and the tail is divided into two longish and pointed lobes. The whole animal has an elegant fish-like form, and has none of that uncouth appearance which prevails in the larger species.

Var. *Ph. gibbosus*. Schreb.



White J. Longo.

PHYSETER. CACHALOT.

Generic Character.

<i>Dentes in maxilla inferiore.</i>	<i>Teeth visible in the lower jaw only.</i>
<i>Fistula in capite s. fronte.</i>	<i>Spiracle on the head or snout.</i>

BLUNT-HEADED CACHALOT.

*Physeter Macrocephalus. P. dorso impinni, fistula in cervice *.*

Lin. Syst. Nat. p. 107. Artedi. Gen. 78. Syn. 108.

Cachalot with finless back, and spiracle on the neck.

Balaena. Jonst. pisc. p. 215. t. 41, 42. Will. ichth. t. A. 1. f. 3.

The Spermaceti Whale. *Brown Jam. p. 459.*

Blunt-headed Cachalot. *Pennant Brit. Zool. p. 59.*

The Parmacity Whale, or Pot Wal Fish. *Dale Harw. p. 413.*

THIS Whale, which is one of the largest species, is scarcely inferior in size to the great Mysticete, often measuring sixty feet or more in length. The head is of enormous size, constituting more than a third of the whole animal; the mouth wide; the upper lip rounded, thick or high, and much broader than the lower, which is of a

* This expression, according to Fabricius, is not quite correct.

somewhat sharpish form, fitting, as it were, into a longitudinal bed or groove in the upper. The teeth, at least the visible ones, as mentioned in the generic character, are situated only in the lower jaw, and when the mouth is closed, are received into so many corresponding holes or cavities in the upper: they are pretty numerous, rather blunt, and of a somewhat conic form, with a very slight bend or inclination inwards: there are also, according to Fabricius, small, curved, flattish, concave, and sharp-pointed teeth, lying almost horizontally along the upper jaw, though, from their peculiar situation and size, they are not visible like those of the lower; being imbedded in the fleshy interstices of the holes which receive the lower teeth, and presenting only their internal concave surfaces to meet the latter when the mouth is closed. The front of the head is very abrupt, descending perpendicularly downwards, and on its top, which has been improperly termed the neck by some authors, is an elevation or angular prominence containing the spiracle, which appears externally simple, but is double within. The head is distinguished or separated from the body by a transverse furrow or wrinkle. The eyes are small and black; and the ears or auditory passages extremely small. About the middle of the back is a kind of spurious fin, or dorsal tubercle*, of a callous nature, not move-

* This is not constant, and seems to constitute the variety figured by Schreber under the title of *Physeter gibbosus*.

able, and somewhat abrupt or cut off behind. The tongue is of the shape of the lower jaw, clay-coloured externally, and of a dull red within. The throat is but small in proportion to the animal. The body is cylindrical beyond the pectoral fins, growing narrower towards the tail. The colour of the whole animal is black, but when advanced in age grows whitish beneath. It swims swiftly, and is said to be a violent enemy to the *Squalus Carcharias* or White Shark, which is sometimes driven ashore in its endeavours to escape, and according to Fabricius, will not venture to approach its enemy even when dead, though fond of preying on other dead Whales. This Whale also devours the *Cyclopterus Lumpus* or Lump-Fish, and many others. The Greenlanders use the flesh, skin, oil, tendons, &c. in the same manner as those of the Narwhal. It is reckoned very difficult to take; being very tenacious of life, and surviving for several days the wounds it receives from its pursuers.

It is in a vast cavity within the upper part of the head of this Whale that the substance called spermaceti is found, which while fresh and in its natural receptacle, is nearly fluid; but when exposed to the air concretes into opake masses: this substance being so universally known, it becomes unnecessary to describe it farther.

A more curious and valuable production, the origin of which had long eluded the investigation of naturalists, is obtained from this animal, viz. the celebrated perfume called Ambergris, which

is found in large masses in the intestines, being in reality no other than the fœces.

A very large specimen of this Whale was once stranded on the coast of Norfolk ; and is particularly commemorated by Sir Thomas Brown, who seems to have been desirous of discovering Ambergris in it, but was repelled by the intolerable fœtor of the animal, which had lain several days in a state of putrefaction. Sir Thomas recites the anecdote in his usual forcible style, and appears to have been rather in doubt of what is now pretty well ascertained, viz. that this perfume has really the origin above described.

“ In vain it was to rake for ambergrise in the paunch of this Leviathan, as Greenland discoverers and attests of experience dictate, that they sometimes swallow great lumps thereof in the sea, insufferable fœtor forbidding that enquiry ; and yet, if, as Paracelsus encourageth, odure makes the best musk, and from the most fetid substances may be drawn the most odoriferous essences, all that had not Vespasian’s nose might boldly swear, here was a fit subject for such extractions.”

SMALL CACHALOT.

Physeter Catodon. *P. dorso impinni, fistula in rostro.* *Lin.*

Syst. Nat. p. 107. *Arte di Gen.* 78. *Syn.* 108.

Cachalot with finless back, and spiracle on the snout.

Cetus minor bipinnis, fistula in rostro. *Briss. Regn. Anim.* p. 361. n. 4.

Round-headed Cachalot. *Pennant Brit. Zool.* 3. p. 56.

THIS species is of far inferior size to the former, measuring about twenty-five feet in length. In its general structure it is allied to the preceding, but has a smaller mouth in proportion, and is without any visible protuberance on the back. It is found in the northern seas.

I must here observe that some of the species of Cachalot seem still but obscurely known, and there is a degree of confusion prevailing with respect to the synonyms of authors; the **Physeter Catodon** of Fabricius being a different species from this, viz. the *P. Tursio* of the Gmelinian edition of the *Systema Naturæ*.

SMALL EYED CACHALOT.

Physeter Microps. P. dorso. pinna longa, maxilla superiore longiore. Lin. Syst. Nat. p. 107. Artedi. Gen. 74. Syn. 104.

Cachalot with long dorsal fin, and upper jaw longer than the lower.

Cetus tripinnis, dentibus acutis arcuatis falciformibus. Briss. Regn. Anim. p. 363. n. 6.

THIS is of equal, and sometimes even superior size to the first described species*, and is a native of the northern seas. The head is very large, and nearly half the length of the body: the eyes extremely small, and the snout slightly obtuse: on the back is a long and somewhat upright narrow and pointed fin. This species swims swiftly, and is said to be a great enemy to the Porpoise, which it pursues and preys upon. Its colour is blackish above and whitish beneath. Some of the supposed varieties of this Whale are said to grow to the length of eighty or an hundred feet. The teeth are of a more curved form than the rest of the genus.

A variety however is mentioned by Brisson, in which the teeth are strait, or nearly so.

* Fabricius however numbers it among the smaller Whales, and adds that it is common in the Greenland seas; that it has twenty teeth in the lower jaw, which are very white, falciform, conically compressed, and sharp-pointed. The Greenlanders also affirm that there are teeth in the upper jaw.

HIGH-FINNED CACHALOT

Physeter Tursio. *P. dorsi pinna altissima, apice dentium plano.*

Lin. Syst. Nat. p. 107. Artedi. Gen. 74. Syn. 104.

Cachalot with very long upright dorsal fin, and teeth flat at the tips.

Cetus tripinnis, dentibus in planum desinentibus. Briss. Regn.

Anim. p. 364. n. 7.

High-finned Cachalot. *Pennant Brit. Zool. 3. p. 57.*

THIS is particularly distinguished by the great length and narrow form of its dorsal fin, which is placed almost upright on the back, and is said by some authors to appear at a distance like the mast of a small ship; the animal growing, if we may believe report, to the length of an hundred feet. In its general appearance it is said much to resemble the former species, of which it may perhaps be a variety rather than truly distinct; but so much obscurity still prevails with respect to the Cetaceous animals that this point must be considered as very doubtful.

DELPHINUS DOLPHIN.

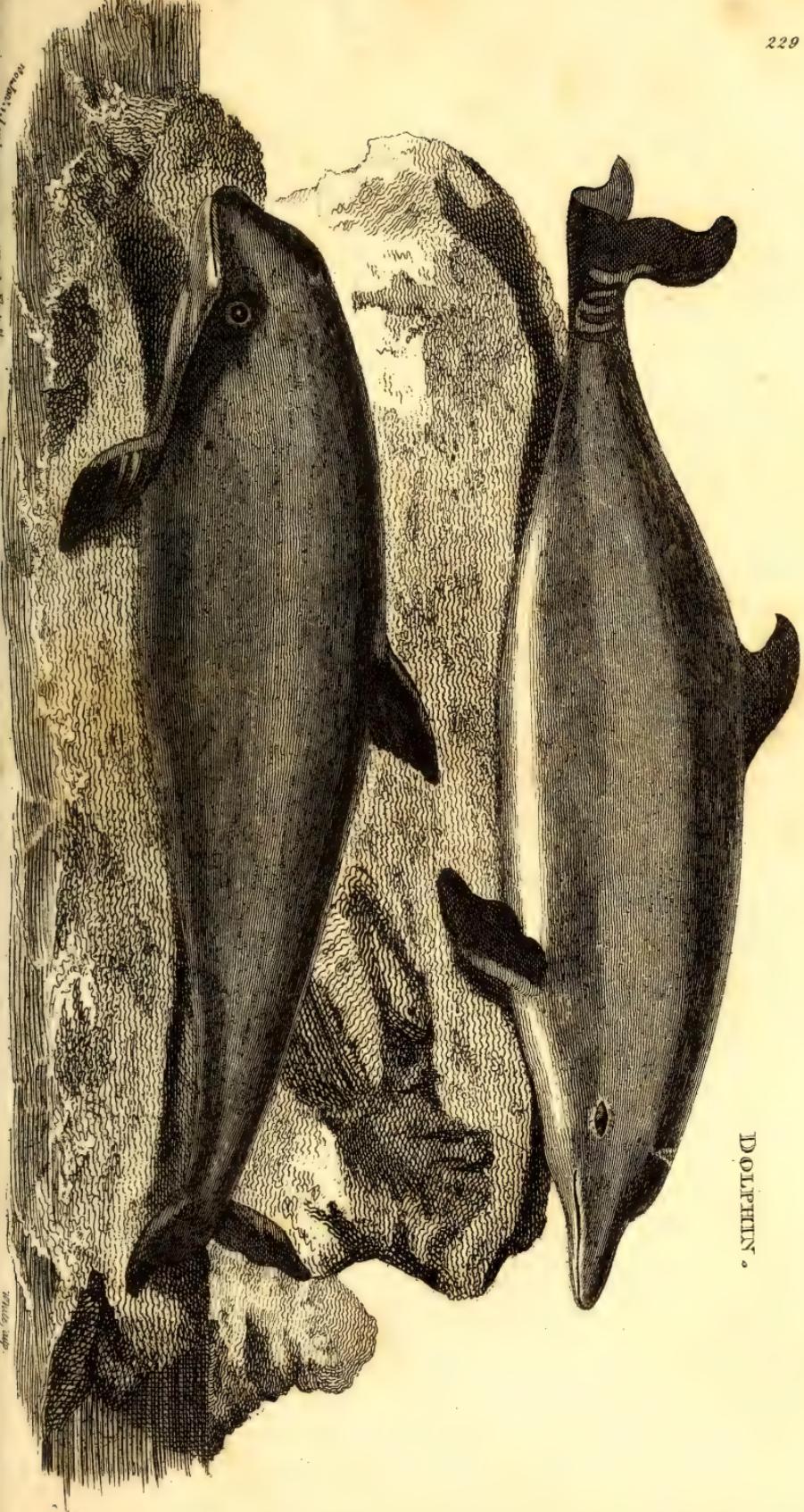
Generic Character.

Dentes in maxilla utraque. || *Teeth in both jaws.*
Fistula in capite. || *Spiracle on the head.*

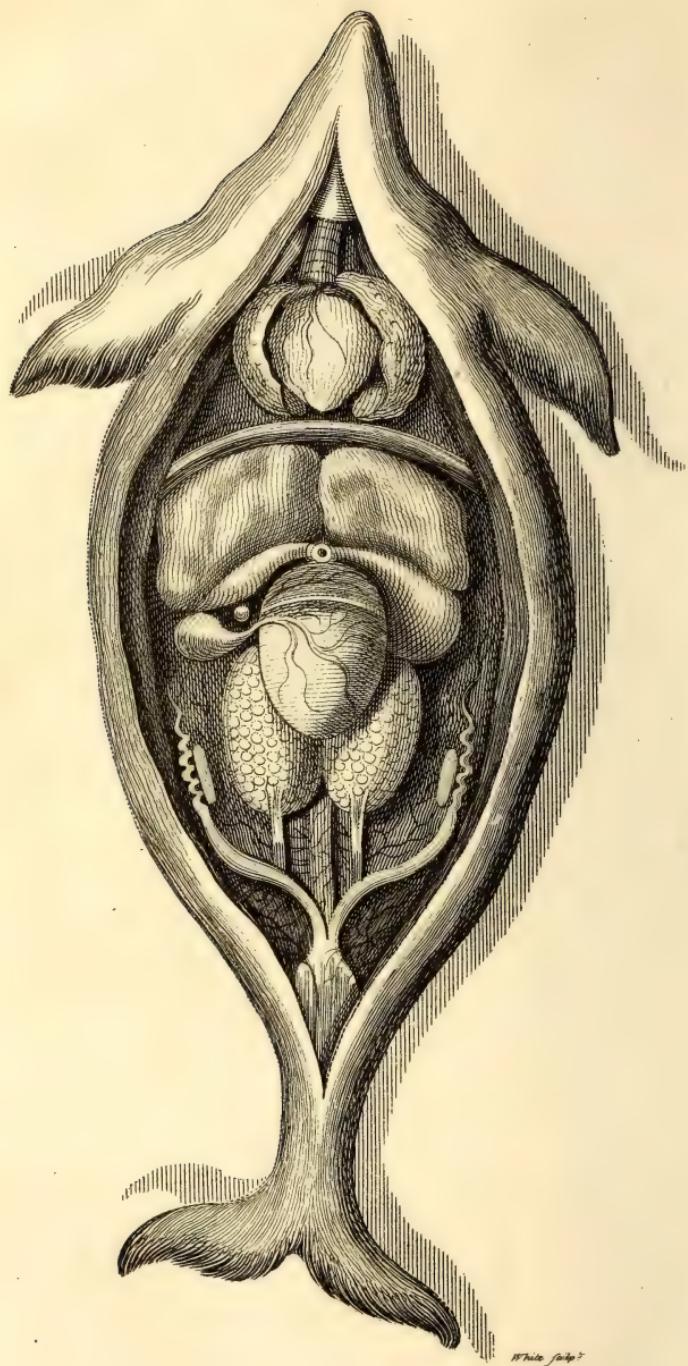
PORPESSE.

Delphinus Phocæna. *D. corpore subconiformi, dorso lato, rostro subobtuso.* *Lin. Syst. Nat. p. 108.* *Artedi Gen. 75.* *Syn. 104.*
Dolphin with subconic body, broad back, and subobtuse snout.
Phocæna. *Rond. Pisc. p. 473.* *Gesn. Aquat. p. 837.* *Aldr. Pisc. p. 719.* *Jonst. Pisc. p. 221.*
Porpess. *Pennant Brit. Zool. p. 61.*

THE Porpesse may be considered as the most common of the whole cetaceous tribe; being found in almost all parts of the European ocean, and sometimes even entering the mouths of large rivers. In its general shape it so much resembles the Dolphin or next species, as to be frequently confounded with it; and navigators in general seem to call both species indiscriminately by the same name. The Porpesse however differs in having a shorter snout, which though somewhat sharply terminated, is much less narrow or pro-



DOLPHIN.



PORPESSE OPENED.

duced than that of the Dolphin. The Porpesse is also, in general, the smallest animal of the two, and rarely exceeds the length of six or seven feet. It is of a thick form on the fore parts, and gradually tapers towards the tail, which is shaped like that of other Cetacea. The back fin is situated rather nearer the tail than the head, and is of a somewhat triangular outline, and placed nearly upright. In colour this animal resembles the Dolphin, being either of a blueish black or of a very dark brown above, and white or nearly white beneath: the eyes are small; behind them are situated the auditory passages, which are very small; and on the upper part of the front is the spiracle, which is somewhat in the form of a crescent: the mouth is of moderate width; the teeth small, rather sharp, and numerous; being commonly about forty-six or fifty in each jaw; the tongue is flat, rounded, notched or crenated on the edge, and pretty closely attached or confined to the surface of the under jaw.

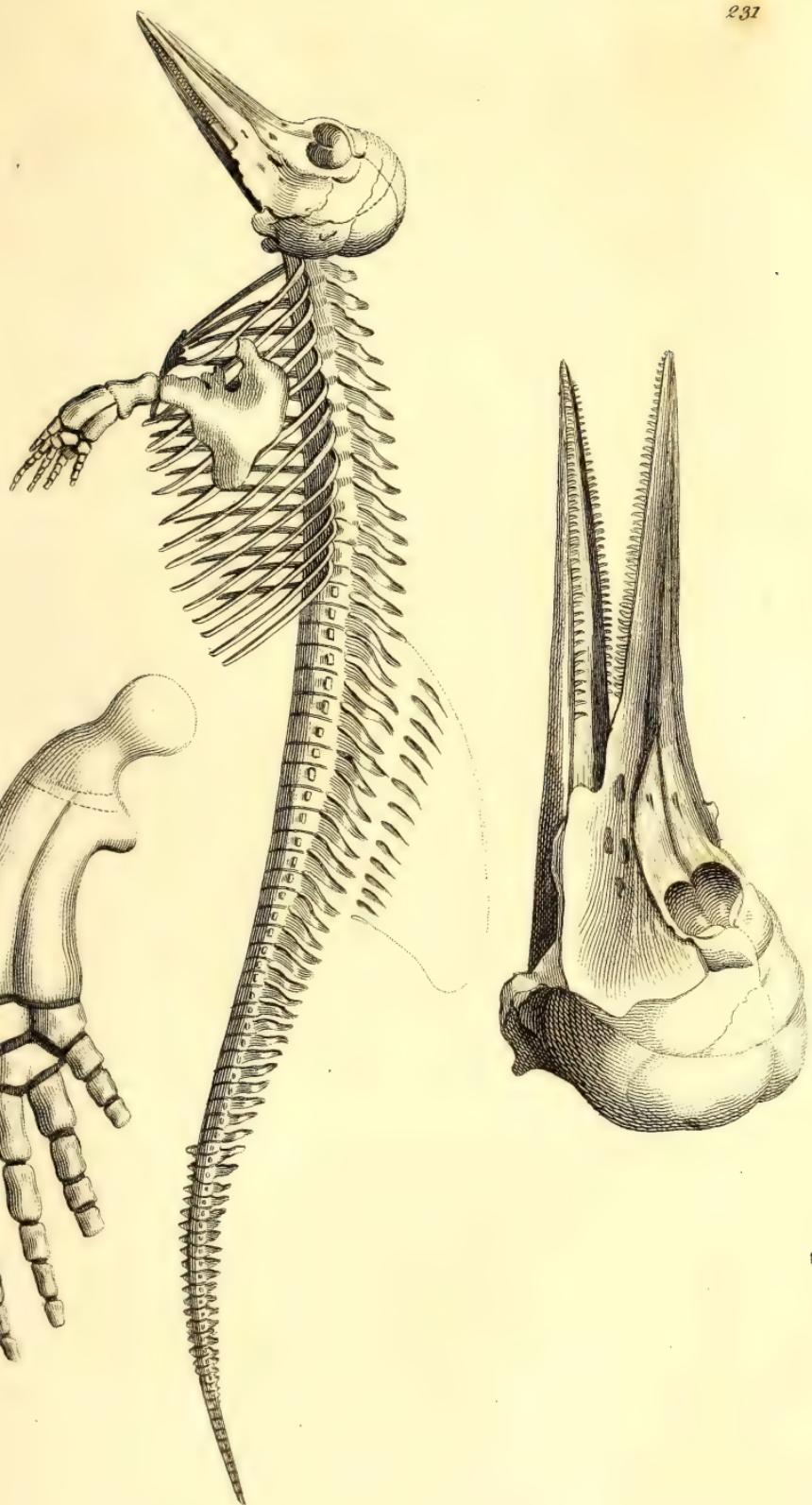
The Porpesse lives chiefly on the smaller kinds of fish, and is observed to root about the shores with its snout, in the manner of a hog, while in quest of food. Like the Dolphin it is seen to gambol about in the ocean, more especially in stormy weather.

Porpesses are also observed to congregate occasionally in vast numbers, and to pursue shoals of Herrings, Mackrel, and other fish, which they drive into the bays and close recesses, and prey upon them with vast voracity. This animal is

remarkably fat, being covered immediately under the skin with a thick coat of lard, affording a great quantity of oil.

The Porpesse was once considered as a sumptuous article of food, and is said to have been occasionally introduced at the tables of the old English nobility; and this so lately as the time of Queen Elizabeth. It was eaten with a sauce composed of crumbs of fine bread with sugar and vinegar. It is however now generally neglected even by sailors.

The Porpesse, being by far the most common, and most easily obtained of all the European Cetacea, has, of course, been more accurately examined than any other species; Belon, Rondeletius, Tyson, and others, having given very good descriptions of its internal structure; and in order to convey a general idea of the similarity of its fabric to that of the terrestrial Mammalia, a figure of an opened Porpesse is introduced into the present publication; some of the viscera being removed, in order to shew others to greater advantage. The skeleton is also represented on a separate plate.



SKELETON OF PORPESSE.

DOLPHIN.

Delphinus Delphis. *D. corpore oblongo subtereti, rostro attenuato acuto.* *Lin. Syst. Nat.* p. 108. *Artedi. Gen.* 76. *Syn.* 105.
Dolphin with oblong subcylindric body, and lengthened sharpish snout.

Delphinus. *Plin. Hist. Nat.* 9. c. 7, 8. 11. c. 37. *Bellon.*
Aquat. p. 7. *Rondel. Pisc.* p. 459. *Gesn. Aquat.* p. 380.
Aldr. Pisc. p. 701. 703, 704. *Jonst. Pisc.* 218.

Porcus marinus. *Sibb. Scot. Ann.* p. 23.

Dolphin. *Pennant Brit. Zool.* p. 58.

THE Dolphin, as observed in the preceding article, bears a great resemblance to the Porpesse, but has a much longer and sharper snout, and the shape of the body is rather more slender. It also grows to a larger size, measuring eight or ten feet in length, and is black above and whitish beneath. The mouth is very wide; the teeth very numerous, small, sharp, and set, as in the Porpesse, in a strait row on each side of both jaws: the eyes are small, the back fin seated as in the former species, beyond the middle of the back. The Dolphin is found in the Mediterranean and Indian seas, and seems to be generally confounded by navigators with the Porpoise, having the same general manners and appearance. It preys on various kinds of fish, and is said to be sometimes seen attacking and wounding even the larger kind of Whales. It swims very swiftly. The appearance both of this species and the Porpesse at sea, is generally considered as one of the preludes of an approaching storm. The prejudices of the ancients were of a contrary cast: with them this animal was celebrated for its supposed affec-

tion to the human race, and its appearance regarded as a prosperous omen. “The Dolphin,” says Pliny, “is friendly to man, and pleased with musick. He does not fly from the sight of mankind, but of his own accord meets their ships, gamboling before them, and accompanying their course, as if through a spirit of emulation; and always outstripping them, even when sailing with the most favourable wind.”

Pliny also relates several tales relative to the affection of the Dolphin to mankind; one of which is the following, which will perhaps appear more interesting in the simple translation of Philemon Holland, than if delivered in the more elegant style of modern language.

“Divo Augusto principe, &c. &c.”—“In the daies of Augustus Cæsar the Emperor, there was a Dolphin entered the gulfe or pool Lucrinus, which loved wonderous well a certain boy a poor man’s sonne: who using to go every day to schoole from Baianum to Puteoli, was woont also about noone-tide to stay at the water side and to call unto the Dolphin *Simo, Simo*, and many times would give him fragments of bread, which of purpose hee ever brought with him, and by this meane allured the Dolphin to come ordinarily unto him at his call. (I would make scruple and bash to insert this tale in my storie and to tell it out, but that Mecænas Fabianus, Flavius Alfius, and many others have set it downe for a truth in their Chronicles.) Well, in processe of time, at what houre soever of the day, this boy lured for

him, and called *Simo*, were the Dolphin never so close hidden in any secret and blind corner, out he would and come abroad, yea and scud amaine to this lad: and taking bread and other victuals at his hand, would gently offer him his back to mount upon, and then down went the sharp-pointed* prickes of his finnes, which he would put up as it were within a sheath, for fear of hurting the boy. Thus when he had him once on his back he would carry him over the broad arme of the sea, as far as Puteoli to schoole; and in like manner convey him back again home: and thus he continued for many yeeres together, so long as the child lived. But when the boy was falne sicke and dead, yet the Dolphin gave not over his haunt, but usually came to the woonted place, and missing the lad, seemed to be heavy and mourne again, untill for verie griefe and sorrow (as it is doubtless to be presumed) he also was found dead upon the shore."

The voice of the Dolphin is, according to Pliny, a sound resembling a human groan; and Willoughby quotes, from *Gillius*, a passage illustrative of this circumstance.

"A captis delphinis, &c. &c."—“In a vessel where several Dolphins were confined, I passed a night of great uneasiness, so feelingly did these poor animals express the misery of their condition by cries and lamentations resembling the human.

* From this observation it should seem that Pliny had not very accurately examined the Dolphin.

Their sufferings forced from me tears of compassion ; and while the fisherman was asleep, I threw one, which seemed to suffer most, into the sea. But this act of tenderness availed me nothing ; for the moanings of those that remained, seemed only to be increased, and they seemed by signs too plain to be misunderstood, to wish for a similar deliverance."

It appears, from the testimony of the accurate Fabricius, in his *Fauna Groenlandica*, that the D. *Phocæna* or Porpoise constantly swims in a curved posture, depressing very considerably both head and tail during that action ; and it is highly probable that the Dolphin swims in the same manner ; thus justifying, in some degree, the representations of the ancients ; who appear indeed to have been guilty of some aggravation in this respect, in their poetical and sculptorial representations, while the moderns, on the contrary, have been somewhat too severe in condemning them.

The learned Sir Thomas Brown has a short chapter on this subject in his celebrated work the *Pseudodoxia Epidemica*, which I shall here introduce, as at once comprising the principal remarks which have been made on the subject, and at the same time as a good example of that author's peculiar style.

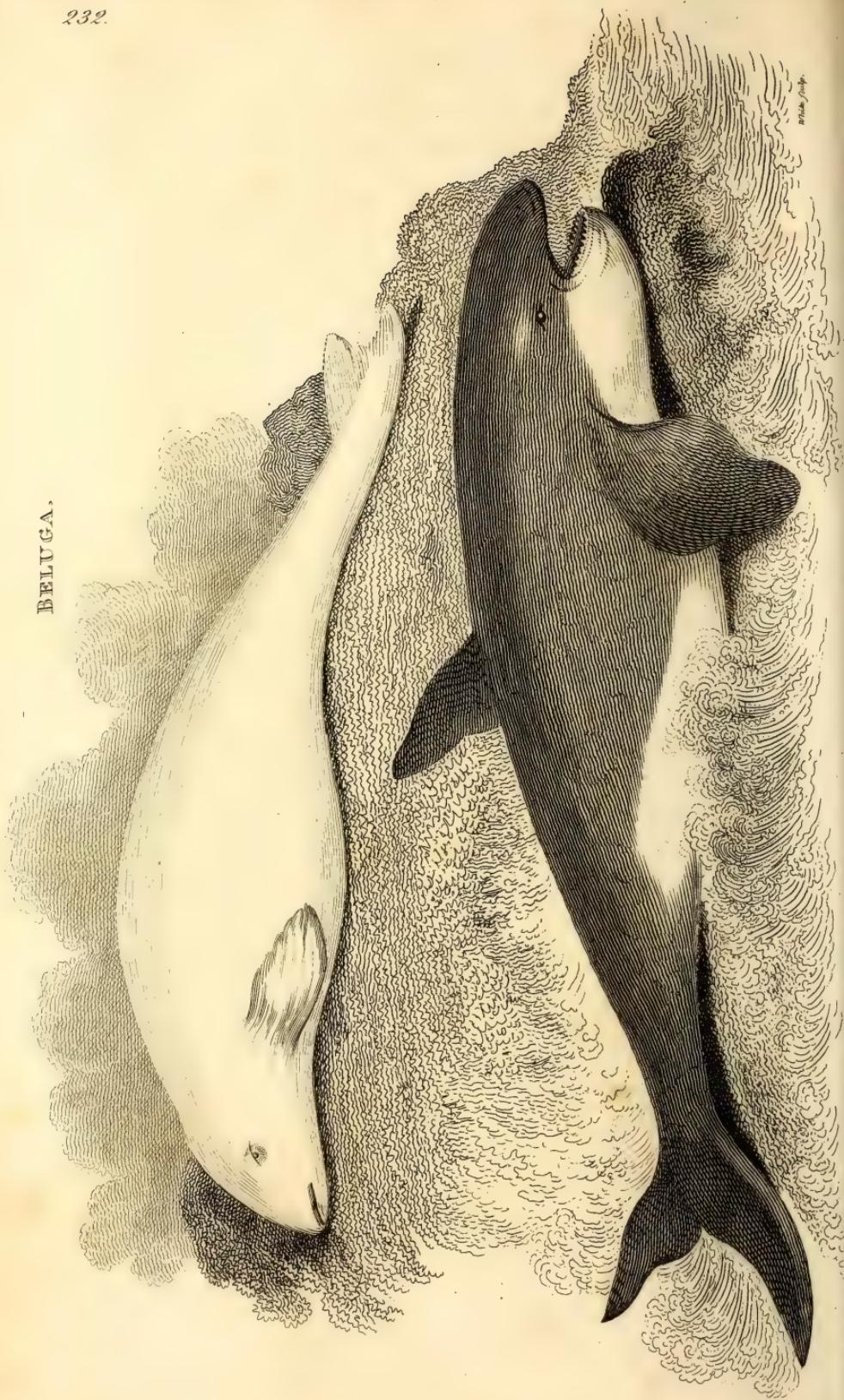
" That Dolphins are crooked, is not only affirmed by the hand of the painter, but commonly conceived their natural and proper figure ; which is not only the opinion of our times, but seems the belief of elder times before us. For beside the

expressions of *Ovid* and *Pliny*, the pourtraicts in some ancient coyns are framed in this figure, as will appear in some thereof in *Gesner*, others in *Goltzius*, and *Lævinus Hulsius* in his description of coyns, from *Julius Cæsar* unto *Rudolphus* the second. Notwithstanding, to speak strictly, in their natural figure they are streight, nor have their spine convexed, or more considerably embowed than Sharks, Porpoises, Whales, and other cetaceous animals, as *Scaliger* plainly affirmeth : *Corpus habet non magis curvum quam reliqui pisces.* As ocular enquiry informeth ; and as, unto such as have not had the opportunity to behold them, their proper pourtraicts will discover in *Rondeletius*, *Gesner*, and *Aldrovandus*. And as indeed is deducible from pictures themselves ; for though they be drawn repandous, or convexedly crooked, in one piece, yet the Dolphin that carrieth *Arion* is concavously inverted, and hath its spine depressed in another. And answerably hereunto we may behold them differently bowed in medals, and the Dolphins of *Tarus* and *Fulius* do make another flexure from those of *Commodus* and *Agrippa*. And therefore what is delivered of their incurvity must either be taken emphatically, that is, not really, but in appearance ; which happeneth when they leap above water, and suddenly shoot down again ; which is a fallacy in vision, whereby streight bodies in a sudden motion protruded obliquely downward, appear unto the eye crooked ; and this is the construction of *Bellonius* : or, if it be taken really, it must not be universally and

perpetually; that is, not when they swim and remain in their proper figures, but only when they leap, or impetuously whirl their bodies any way; and this is the opinion of *Gesnerus*. Or lastly, it may be taken neither really nor emphatically, but only emblematically: for being the hieroglyphic of celerity, and swifter than other animals, men best expressed their velocity by incurvity, and under some figure of a bow: and in this sense probably do Heralds also receive it, when from a Dolphin extended they distinguish a Dolphin embowed. And thus also must that picture be taken of a Dolphin clasping an anchor; that is, not really, as is by most conceived, as out of affection unto man, conveighing the anchor unto the ground; but emblematically, according as *Pierius* hath expressed it, the swiftest animal conjoyned with that heavy body, implying that common moral, *Festina lente*; and that celerity should always be contempered with cunctation."



BELUGA.



GRAMPUS.

Delphinus Orca. *D. rostro sursum repando, dentibus latis serratis* *. *Lin. Syst. Nat. p. 108. Arted. Gen. 76. Syn. 106.*

Delphinus corpore crasso, dorso pinnato, rostro sursum repando, dentibus obtusis. *Fabr. Faun. Groenl. p. 49.*

Dolphin with thick body, snout spreading upwards, and obtuse teeth.

Butskopf. *Mart. Spitzb. p. 93. Cranz. Groenl. p. 151.*

THE Orc or Grampus is by far the largest animal of this genus, arriving at the length of twenty-five feet, and is of an extremely fierce and predatory disposition, feeding on the larger fishes, and even on the Dolphin and Porpesse. It is also said to attack other Whales, and to devour Seals, which it occasionally finds sleeping on the rocks, dislodging them by means of its back fin, and precipitating them into the water. In its general form and colour it resembles the rest of this genus; but the lower jaw is much wider than the upper, and the body somewhat broader and deeper in proportion: the back-fin sometimes measures not less than six feet in length from the base to the tip. The Grampus is found in the Mediterranean and Atlantic seas, as well as in both the polar regions. It is emphatically styled by Fabricius *Balaenarum Tyrannus*, and is considered as one of the most ferocious inhabitants of the ocean.

* This appears to be an error, none of the Whales having serrated teeth.

BIDENT DOLPHIN.

Delphinus Bidens. D. dentibus duobus in fronte maxillæ superioris.

Dolphin with two teeth in the front of the upper jaw.

Bottle-nose Whale of Dale. *Hunter Phil. Trans. vol. 77. pl. 19.*

THIS is introduced by Mr. Hunter into the Philosophical Transactions, and is the Bottle-nosed Whale of Dale*. It has the general appearance of the Dolphin, but has a much shorter snout, the front bulging out very much above, and has only two teeth, which are situated in front of the upper jaw. The specimen mentioned by Mr. Hunter measured twenty-one feet, in length. The pectoral and back fins are small, and the latter placed pretty low on the back.

NARROW-SNOUTED DOLPHIN.

Delphinus Rostratus. D. rostro attenuato.

Dolphin with greatly attenuated snout.

KNOWN only from the head, or bones of the jaws. Supposed to inhabit the Indian seas. The jaws are extremely narrow in proportion to their length, which is about two feet: the teeth are small, not numerous, distant, and shaped somewhat like the molares of quadrupeds.

* Dale's Harwich.

BELUGA.

Delphinus Leucas. *D. rostro conico obtuso, deorsum inclinato, pinna dorsali nulla.* *Lin. Syst. Nat. Gmel. p. 232.* *Pall. it. 3. p. 84. t. 4.*

White Dolphin, without dorsal fin.

Delphinus pinna in dorso nulla. *Briss. Regn. Anim. p. 374. n. 5.*
Beluga. Stell. Camtsch. p. 106.

THIS is a species which appears to have been not very distinctly known till within a few years past. It is a native of the northern seas, and, like the Porpesse, sometimes enters into rivers. It has been well described both by Fabricius and Pallas. It is of a more elegant appearance than the rest of this tribe, and when full grown is entirely milk-white, in some specimens tinged very slightly with rose-colour, and in others with blueish. It measures from twelve to eighteen feet in length, and sometimes even more, and preys upon all kinds of middle sized fish; as herrings, cod, flat-fish, &c. &c. It is a gregarious species, and is often observed swimming in large shoals, the young accompanying their parents, and the whole forming a beautiful spectacle, from the unusual colour. They are also sometimes observed to follow boats for a considerable time together. The head of this species is rather small than large; and is joined to the body by a kind of almost imperceptible neck or contracted part: the spiracle is situated on the top of the head, and is internally double: the eyes are very small, blueish, and the opening of the mouth by no means wide: the

the teeth are rather blunt, small, not very numerous, being about ten on each side, in both jaws: the auditory passages are situated a little behind the eyes: the body is fish-shaped, thick in the middle, and tapering towards the tail, which is slightly lobed or divided: the back has a kind of longitudinal ridge on the lower part, as in the *Balæna Mysticetus*. The pectoral fins are thick and fatty, and are marked at the edge into five slight divisions; they contain the bones of the five fingers, which may be easily felt within the fin: there is no back fin. The skin, on every part, is smooth and slippery, and the animal is generally very fat.

When this animal swims, says Dr. Pallas, it bends the tail inwards in the manner of a crawfish, by which means it possesses the power of swimming extremely fast, by the alternate incurvation and extension of that part. It has so great a general affinity with the Seals, that the *Samoids* consider it as a kind of aquatic quadruped. It produces only one young at a birth, which is at first of a blue tinge, and sometimes grey, or even blackish; acquiring as it advances in age the pure milk-white colour.

A P P E N D I X

to

W H A L E S.

AS an appendix to the history of this extraordinary tribe, and in order to convey as much general information as possible on so interesting a subject, I shall avail myself of Mr. Hunter's excellent paper in the Philosophical Transactions, in which an accurate description is given both of the external and internal appearance of several of the principal species. I shall give the observations chiefly in Mr. Hunter's own words, with some occasional abridgements and omissions. The whole must necessarily appear somewhat tedious to common readers, but those who know how to appreciate its importance will highly approve of its insertion.

THIS order of animals has nothing peculiar to fish, except living in the same element, and being endowed with the same powers of progressive motion as those fish which are intended to move with a considerable velocity.

Although inhabitants of the waters, they belong to the same class as quadrupeds; breathing air, being furnished with lungs, and all other parts peculiar to the œconomy of that class, and having warm blood; for we may make this general remark, that in the different classes of animals there

is never any mixture of those parts which are essential to life, nor in their different modes of sensation.

The external form of this order of animals is such as fits them for dividing the water in progressive motion, and gives them the power to produce that motion in the same manner as those fish which move with a considerable degree of velocity. On account of their inhabiting the water, their external form is more uniform than in animals of the same class which live upon land; the surface of the earth, on which the progressive motion of the quadruped is to be performed, being various and irregular, while the water is always the same.

The form of the head or anterior part of this order of animals is commonly a cone, or an inclined plane, except in the Spermaceti Whale, in which it terminates in a blunt surface. This form of head increases the surface of contact to the same volume of water which it removes, lessens the pressure, and is better calculated to bear the resistance of the water through which the animal is to pass: probably on this account the head is larger than in quadrupeds, having more the proportion observed in fish, and swelling out laterally at the articulation of the lower jaw: this may probably be for the better catching their prey, as they have no motion of the head on the body; and this distance between the articulations of the jaw is somewhat similar to the Swallow, Goat-sucker, Bat, &c. which may also be accounted

for, from their catching their food in the same manner as fish; and this is rendered still more probable, since the form of the mouth varies according as they have or have not teeth. There is however in the Whale tribe more variety in the form of the head than of any other part, as in the Whalebone, Bottle-nose, and Spermaceti Whales; though in this last it appears to owe its shape, in some sort, to the vast quantity of spermaceti lodged there, and not to be formed merely for the catching of its prey. From the mode of their progressive motion they have not the connexion between the head and body that is called the neck, as that would have produced an inequality inconvenient to progressive motion.

The body behind the fins or shoulders diminishes gradually to the spreading of the tail; but the part beyond the opening of the vent is to be considered as tail, although to appearance it is a continuation of the body. The body itself is flattened laterally, and I believe the back is much sharper than the belly.

The projecting part, or tail, contains the power that produces progressive motion, and moves the broad termination, the motion of which is similar to that of an oar in sculling a boat: it supersedes the necessity of posterior extremities, and allows of the proper shape for swimming.

The tail is flattened horizontally, which is contrary to that of fish, this position of tail giving the direction to the animal in the progressive motion of the body.

The two lateral fins, which are analogous to the anterior extremities in the quadruped, are commonly small, varying however in size, and seem to serve as a kind of oars.

To ascertain the use of the fin on the back is probably not so easy, as the large Whalebone and Spermaceti Whales have it not; one should otherwise conceive it intended to preserve the animal from turning.

I believe, like most animals, they are of a lighter colour on their belly than on their back: in some they are entirely white on the belly; and this white colour begins by a regular determined line, as in the Grampus, Piked Whale, &c. in others the white on the belly is gradually shaded into the dark colour of the back, as in the Porpoise. I have been informed that some of them are pied upwards and downwards, or have the divisions of colour in a contrary direction.

The element in which they live renders some parts which are of importance in other animals useless to them, gives to some parts a different action, and renders others of less account.

The tongue is flat, and but little projecting, as they neither have voice, nor require much action of this part in applying the food between the teeth for the purpose of mastication or deglutition, being nearly similar to fish in this respect as well as in their progressive motion.

In some particulars they differ as much from one another as any two genera of quadrupeds I am acquainted with.

The larynx, size of trachea, and number of ribs, differ exceedingly. The coecum is only found in some of them. The teeth in some are wanting. The blow-holes are two in number in many; in others only one. The Whalebone and Spermaceti are peculiar to particular genera; all which constitute great variations. In other respects we find an uniformity, which would appear to be independent of their living and moving only in the water, as in the stomach, liver, kidneys, &c.

From the tail being horizontal, the motion of the animal, when impelled by it, is up and down: two advantages are gained by this; it gives the necessary opportunities of breathing, and elevates them in the water; for every motion of the tail tends to raise the animal; and that this may be effected, the greatest motion of the tail is downwards, those muscles being very large, making two ridges in the abdomen: this motion of the tail raises the anterior extremity, which always tends to keep the body suspended in the water.

The bones alone, in many animals, when properly united into what is called the skeleton, give the general shape and character of the animal. Thus a quadruped is distinguished from a bird, and even one quadruped from another, it only requiring a skin to be thrown over the skeleton to make the species known; but this is not so decidedly the case in this order of animals, for the skeleton in them does not give us the true shape. An immense head, a small neck, few ribs, and in many a short sternum and no pelvis, with a long

spine, terminating in a point, require more than a skin being laid over them in order to give the regular and characteristic form of the animal.

The bones of the anterior extremity give no idea of the shape of a fin, the form of which depends wholly upon its covering. The different parts of the skeleton are so inclosed, and the spaces between the projecting parts are so filled up, as to be altogether concealed, giving the animal externally an uniform and elegant form, resembling an insect enveloped in its chrysalis coat.

The bones of the head are in general so large, as to render the cavity which contains the brain but a small part of the whole; while in the human species, and in birds, this cavity constitutes the principal bulk of the head*. This is, perhaps, most remarkable in the Spermaceti Whale; for on a general view of the bones of the head, it is impossible to determine where the cavity of the skull lies, till led to it by the foramen magnum occiptale. The same remark is applicable to the large Whalebone and Bottle-nose Whale; but in the Porpoise, where the brain is larger in proportion to the size of the animal, the skull makes the principal part of the head.

Some of the bones in one genus differ from those of another. The lower jaw is an instance

* In the Porpoise however, the head of which bears a considerable resemblance to that of a bird, the brain is extremely large, and much resembles the human.

of this. In the Spermaceti Whale, the Bottle-nose, the Grampus, and the Porpoise, the lower jaws, especially at the posterior ends, resemble each other; but in both the large and small Whalebone Whales, the shape differs considerably: the number of some particular bones likewise differs very much.

The Piked Whale has seven vertebræ in the neck, twelve which may be reckoned to the back, and twenty-seven to the tail, making forty-six in the whole.

In the Porpoise there are five cervical vertebræ, and one common to the neck and back, fourteen proper to the back, and thirty to the tail, making in the whole fifty-one.

The small Bottle-nose Whale, in the number of cervical vertebræ, resembles the Porpoise; it has seventeen in the back, and thirty-seven in the tail, in all sixty.

In the Porpoise, four of the vertebræ of the neck are ankylosed; and in every animal of this order, which I have examined, the atlas is by much the thickest, and seems to be made up of two joined together, for the second cervical nerve passes through a foramen in this vertebra. There is no articulation for a rotatory motion between the first and second vertebræ of the neck.

The small Bottle-nose Whale has eighteen ribs on each side; the Porpoise sixteen. The ends of the ribs that have two articulations, in the whole of this tribe, I believe, are articulated with the body of the vertebræ above, and with the trans-

verse processes below by the angles; so that there is one vertebra common to the neck and back. In the large Whalebone Whale the first rib is bifurcated, and consequently articulated to two vertebræ.

The sternum is very flat in the Piked Whale; it is only one very short bone; and in the Porpoise it is a good deal longer. In the small Bottle-nose it is composed of three bones, and is of some length. In the Piked Whale the first rib, and in the Porpoise the three first, are articulated with the sternum.

As a contraction, corresponding to the neck in quadrupeds, would have been improper in this order of animals, the vertebræ of the neck are thin, to make the distance between the head and shoulders as short as possible, and in the small Bottle-nose Whale are only six in number.

The structure of the bones is similar to that of the bones of quadrupeds; they are composed of an animal substance, and an earth that is not animal: these seem only to be mechanically mixed, or rather the earth thrown into the interstices of the animal part. In the bones of fishes this does not seem to be the case, the earth in many fish being so united with the animal part, as to render the whole transparent, which is not the case when the animal part is removed by steeping the bone in caustic alkali; nor is the animal part so transparent when deprived of the earth. The bones are less compact than those of quadrupeds that are similar to them.

Their form somewhat resembles what takes place in the quadruped, at least in those of which the uses are similar, as the vertebræ, ribs, and bones of the anterior extremities have their articulations in part alike, although not in all of them. The articulation of the lower jaw, of the carpus, metacarpus, and fingers, are exceptions. The articulation of the lower jaw is not by simple contact either single or double, joined by a capsular ligament, as in the quadruped; but by a very thick intermediate substance of the ligamentous kind, so interwoven that its parts move on each other, in the interstices of which is an oil. This thick matted substance may answer the same purpose as the double joint in the quadruped.

The two fins are analogous to the anterior extremities of the quadruped, and are also somewhat similar in construction. A fin is composed of a scapula, os humeri, ulna, radius, carpus, and metacarpus, in which last may be included the fingers, because the number of bones are those which might be called fingers, though they are not separated, but included in one general covering with the metacarpus. They have nothing analogous to the thumb, and the number of bones in each is different: in the fore-finger there are five bones; in the middle and ring-finger seven, and in the little finger four. The articulation of the carpus, metacarpus, and fingers, is different from that of the quadruped, not being by capsular ligament, but by intermediate cartilages connected to each bone. These cartilages between the

different bones of the fingers are of considerable length, being nearly equal to one half of that of the bone; and this construction of the parts gives firmness, with some degree of pliability, to the whole.

As this order of animals cannot be said to have a pelvis, they of course have no os sacrum, and therefore the vertebræ are continued on to the end of the tail; but with no distinction between those of the loins and tail. But as those vertebræ alone would not have had sufficient surface to give rise to the muscles requisite to the motion of the tail, there are bones added to the fore-part of some of the first vertebræ of the tail, similar to the spinal processes on the posterior surface.

From all these observations we may infer, that the structure, formation, arrangement, and the union of the bones, which compose the forms of parts in this order of animals, are much upon the same principle as in quadrupeds.

The flesh or muscles of this order of animals is red, resembling that of quadrupeds, perhaps more like that of the Bull or Horse than any other animal: some of it is very firm; and about the breast and belly it is mixed with tendon.

Although the body and tail is composed of a series of bones connected together and moved as in fish, yet it has its movements produced by long muscles, with long tendons; which renders the body thicker, while the tail at its stem is smaller than that of any other swimmer, whose principal motion is the same. Why this mode of applying

the moving powers should not have been used in fish, is probably not so easily answered; but in fish the muscles of the body are of nearly the same length as the vertebrae.

The depressor muscles of the tail, which are similar in situation to the psoæ, make two very large ridges on the lower part of the cavity of the belly, rising much higher than the spine, and the lower part of the aorta passes between them.

These two large muscles, instead of being inserted into two extremities as in the quadruped, go to the tail, which may be considered in this order of animals as the two posterior extremities united into one.

Their muscles, a very short time after death, lose their fibrous texture, and become as uniform in texture as clay or dough, and even softer. This change is not from putrefaction, as they continue to be free from any offensive smell, and is most remarkable in the psoæ muscles, and those of the back.

The mode in which the tail is constructed is perhaps as beautiful, as to the mechanism, as any part of the animal. It is wholly composed of three layers of tendinous fibres, covered by the common cutis and cuticle: two of these layers are external; the other internal. The direction of the fibres of the external layers is the same as in the tail, forming a stratum about one third of an inch thick; but varying in this respect as the tail is thicker or thinner. The middle layer is composed entirely of tendinous fibres, passing directly

across, between the two external ones above described, the length being in proportion to the thickness of the tail: a structure which gives amazing strength to this part.

The substance of the tail is so firm and compact, that the vessels retain their dilated state, even when cut across, and this section consists of a large vessel surrounded by as many small ones as can come in contact with its external surface; which of these are arteries and which veins I do not know.

The fins are merely covered with a strong, condensed, adipose membrane.

The fat of this order of animals, except the spermaceti, is what we generally term oil. It does not coagulate in our atmosphere, and is probably the most fluid of animal fats. The fat is differently situated in different orders of animals; in those which are the subject of the present paper it is found principally on the outside of the muscles, immediately under the skin, and is in considerable quantity: it is rarely to be met with in the interstices of the muscles, or in any of the cavities, such as the abdomen, or about the heart: the small quantity found in the cavities of the body and interstices of parts is in general disposed in the same way as in quadrupeds; but the external, which includes the principal part, is inclosed in a reticular membrane, apparently composed of fibres passing in all directions, which seem to confine its extent, allowing it little or no motion on itself; the whole, when distended,

almost forming a solid body. This however is not always the case, in every part of animals of this order, for under the head, or what may be rather called neck, of the Bottle-nose Whale the fat is confined in larger cells, admitting of motion. This reticular membrane is very fine in some, and very strong and coarse in others, and even varies in different parts of the same animal. It is fine in the Porpoise, Spermaceti, and large Whalebone Whale, and coarse in the Grampus and small Whalebone Whale. In all of them it is finest on the body, becoming coarser towards the tail, which is composed of fibres without any fat, which is also the case in the covering of the fins.

In this order of animals the internal fat is the least fluid, and is nearly of the consistence of hog's lard; the external is the common train oil: but the Spermaceti Whale differs from every other animal I have examined; having the two kinds of fat just mentioned, and another which is totally different, called spermaceti. This is found every where in the body in small quantities, mixed with the common fat, to which it bears a very small proportion; but in the head it is the reverse, for there the spermaceti is large in quantity compared with the oil, although they are mixed, as in other parts of the body. As the spermaceti is found in the largest quantity in the head, and in what would appear on a slight view to be the cavity of the skull, from a peculiarity of the shape of that bone, it has been imagined by some to be the brain.

These two kinds of fat in the head are contained in cells or cellular membrane, in the same manner as the fat in other animals; but besides the common cells there are larger ones, or ligamentous partitions going across, the better to support the vast load of oil, of which the bulk of the head is principally made up.

There are two places in the head where this oil lies; these are situated along its upper and lower parts: between them pass the nostrils, and a vast number of tendons going to the nose and different parts of the head.

The purest spermaceti is contained in the smallest and least ligamentous cells: it lies above the nostrils, all along the upper part of the head, immediately above the skin and common adipose membrane. These cells resemble those which contain the common fat in the other parts of the body nearest the skin. That which lies above the roof of the mouth, or between the nostrils, is more intermixed with a ligamentous cellular membrane, and lies in chambers whose partitions are perpendicular. These chambers are smaller the nearer the nose, becoming larger towards the back part of the head, where the spermaceti is more pure.

This spermaceti, when extracted cold, has a good deal the appearance of the internal structure of a water-melon, and is found in rather solid lumps.

About the nose or anterior part of the nostril, I discovered a great many vessels, having the appearance of a plexus of veins, some as large as a

finger. On examining them I found them loaded with the spermaceti and oil; and some had corresponding arteries. They were most probably lymphatics; and I should therefore suppose that their contents had been absorbed from the cells of the head. We may the more readily suppose this, from finding many of the cells or chambers almost empty; and as we may reasonably believe that this animal had been some time out of the seas in which it could procure proper food, it had perhaps lived on the superabundance of its oil.

The solid masses are what are brought home in casks for spermaceti.

The skin in this order of animals consists of a cuticle and cutis. The cuticle is somewhat similar to that on the sole of the human foot, and appears to be made up of a number of layers, which separate by slight putrefaction; but this I suspect arises in some degree from there being a succession of cuticles formed. It has no degree of elasticity or toughness, but tears easily; nor do its fibres appear to have any particular direction. The internal stratum is tough and thick, and in the Spermaceti Whale its internal surface, when separated from the cutis, is just like coarse velvet, each pile standing firm in its place; but this is not so distinguishable in some of the others, although it appears rough from the innumerable perforations.

It is the cuticle that gives colour to the animal; and in parts that are dark I think I have seen a dirty-coloured substance washed away in the separation of the cuticle from the cutis, which must

be a kind of rete mucosum. The cutis in this tribe is extremely villous on its external surface, answering to the rough surface of the cuticle, and forming in some parts small ridges, similar to those on the human fingers and toes. These villi are soft and pliable; they float in water, and each is longer or shorter according to the size of the animal. In the Spermaceti Whale they were about a quarter of an inch long: in the Grampus, Bottlenose, and Piked Whales much shorter: in all they are extremely vascular.

The mouths of animals are the first parts to be considered respecting nourishment or food, and are so much connected with every thing relative to it, as not only to give good hints whether the food is animal or vegetable, but also respecting the particular kinds of either, and especially of animal food. The mouth in this tribe is well adapted for catching the food: the jaws spread as they go back, making the mouth proportionally wider than in many other animals. In the formation of the mouth in Whales, there is a very great variety. Some catch their food by means of teeth, as in the Porpoise and Grampus: in others they are only in one jaw, as in the Spermaceti Whale; and in the large Bottle-nose Whale described by Dale, there are only two small teeth in the anterior part of the lower jaw; while in some others there are none at all. In those which have teeth in both jaws the number varies very considerably: the small Bottle-nose has forty-six in the upper, and fifty in the lower: and in the jaws of others

there are only five or six in each. The teeth are not divisible into different classes, as in quadrupeds, but are all pointed teeth, and are commonly a good deal similar. Each tooth is a double cone, one point being fastened into the gum, the other projecting: they are however not all of exactly this shape. In some species of Porpoise the fang is flattened, and thin at its extremity: in the Spermaceti Whale the body of the tooth is a little curved towards the back part of the mouth; as is also the case with some others. The teeth are composed of animal substance and earth, similar to the bony part of the teeth in quadrupeds.

It would appear that these animals do not shed their teeth, nor have they new ones formed similar to the old, as is the case with most other quadrupeds, and also with the Alligator. I have never been able to detect young teeth under the roots of the old; and indeed the situation in which they are formed makes it in some degree impossible, if the young teeth follow the same rule in growing with the original ones, as they probably do in most animals.

Some genera of this tribe have another mode of catching their food, and retaining it till it is swallowed; which is by means of the substance called Whalebone. Of this there are two kinds known: one very large; probably from the largest of all Whales yet discovered; the other from a smaller species. The whalebone, which is placed on the inside of the mouth, and attached to the upper jaw,

constitutes one of the most singular circumstances belonging to this species, as they have most other parts in common with quadrupeds. It is a substance, I believe, peculiar to the Whale, and of the same nature as horn; or similar to that which constitutes hair, nails, claws, feathers, &c. It is wholly composed of an animal substance, and extremely elastic.

Whalebone consists of thin plates, of some breadth, and in some of very considerable length, the breadth and length in some degree corresponding with one another; and when longest they are commonly broadest, but not always so. These plates are very different in size in different parts of the same animal's mouth; more especially in the large Whalebone Whale, whose upper jaw does not pass parallel upon the under, but makes an arch, the semidiameter of which is about one fourth of the length of the jaw. The head in my possession is nineteen feet long, the semidiameter not quite five feet: if this proportion is preserved, those Whales which have whalebone fifteen feet long must be of an immense size.

These plates are placed in several rows, encompassing the outer skirts of the upper jaw, similar to teeth in other animals. They stand parallel to each other, having one edge towards the circumference of the mouth, and the other towards the centre or cavity. They are placed near together in the Piked Whale, not being a quarter of an inch asunder at the greatest distance, yet differ-

ing in this respect in different parts of the same mouth; but in the great Whale the distances are more considerable.

The outer row is composed of the longest plates; and these are in proportion to the different distances between the two jaws, some being fourteen or fifteen feet long, and twelve or fifteen inches broad; but towards the anterior and posterior part of the mouth they are very short: they rise for half a foot or more, nearly of equal breadths, and afterwards shelve off from their inner side until they come near to a point at the outer: the exterior of the inner rows are the longest, corresponding at the termination of the declivity of the outer, and become shorter and shorter till they hardly rise above the gum. The inner rows are closer than the outer, and rise almost perpendicularly from the gum, being longitudinally strait, and have less of the declivity than the outer. The plates of the outer row laterally are not quite flat, but make a serpentine line, more especially in the Piked Whale: the outer edge is thicker than the inner. All round the line made by their outer edges, runs a small white bead, which is formed along with the whalebone, and wears down with it. The smaller plates are nearly of an equal thickness upon both edges. In all of them the termination is in a kind of hair, as if the plate was split into innumerable small parts, the exterior being the longest and strongest.

The two sides of the mouth composed of these rows meet nearly in a point at the tip of the jaw,

and spread or recede laterally from each other as they pass back ; and at their posterior ends, in the Piked Whale, they make a sweep inwards, and come very near each other, just before the opening of the œsophagus. In the Piked Whale there were above three hundred in the outer rows on each side of the mouth. Each layer terminates in an oblique surface, which obliquity inclines to the roof of the mouth, answering to the gradual diminution of their length ; so that the whole surface, composed of these terminations, forms one plane, rising gradually from the roof of the mouth : from this obliquity of the edge of the outer row, we may in some measure judge of the extent of the whole base, but not exactly, as it makes a hollow curve, which increases the base. The whole surface resembles the skin of an animal covered with strong hair, under which surface the tongue must immediately lie when the mouth is shut : it is of a light-brown colour in the Piked Whale, and of a darker colour in the large Whale. In the Piked Whale, when the mouth is shut, the projecting whalebone remains entirely on the inside of the lower jaw, the two jaws meeting every where along their surface ; but how this is effected in the large Whale I do not certainly know, the horizontal plane made by the lower jaw being strait, as in the Piked Whale ; but the upper jaw being an arch cannot be hid by the lower. I suppose therefore that a broad upper lip, meeting as low as the lower jaw, covers the whole of the outer edges of the exterior rows. The whalebone is

continually wearing down, and renewing in the same proportion, except that when the animal is growing it is renewed faster, and in proportion to its growth. The use of the whalebone, I should believe, is principally for the retention of the food till swallowed, and do suppose that the fish they catch are small when compared with the size of the mouth.

The œsophagus is larger in proportion to the bulk of the animal than in the quadruped, although not so much so as it usually is in fish, which we may suppose swallow their food much in the same way. In the Piked Whale it was three inches and a half wide. The stomach, as in other animals, lies on the left side of the body, and terminates in the pylorus towards the right.

The Duodenum passes down on the right side, very much as in the human subject, excepting that it is more exposed, from the colon not crossing it: it lies on the right kidney, and then passes to the left side behind the ascending part of the colon and root of the mesentery, comes out on the left side, and getting on the edge of the mesentery becomes a loose intestine, forming the jejunum. In this course, behind the mesentery it is exposed, as in most quadrupeds, not being covered by it as in the human. The jejunum and ilium pass along the edge of the mesentery downwards to the lower part of the abdomen. The ilium near the lower end makes a turn towards the right side, and then mounting upwards, round the edge of the mesentery, passes a little way on the right, as

high as the kidney, and there enters the colon, or cœcum: the cœcum lies on the lower end of the kidney, considerably higher than in the human body, which renders the ascending part of the colon short. The cœcum is about seven inches long, and more like that of the Lion or Seal than any other animal I know.

The colon passes obliquely up the right side, a little towards the middle of the abdomen, and when as high as the stomach, crosses to the left, and acquires a broad mesocolon: at this part it lies upon the left kidney, and in its passage down gets more and more to the middle line of the body. When it has reached the lower part of the abdomen it passes behind the other viscera, bending down to open on what is called the belly of the animal, and in its whole course it is gently convoluted. In those which have no cœcum, and therefore can hardly be said to have a colon, the intestine before its termination in the rectum makes the same kind of sweep round the other intestines as the colon does where there is a cœcum.

The intestines are not large for the size of the animal, not being larger in those of eighteen or twenty-four feet long than in the Horse, the colon not much more capacious than the jejunum and ilium, and very short; a circumstance common to carnivorous animals. In the Piked Whale the length from the stomach to the cœcum is twenty-eight yards and a half, length of cœcum seven inches, of the colon to the vent two yards and three quarters. The small intestines are just

five times the length of the animal, the colon with the cœcum a little more than one half the length.

Those parts that respect the nourishment of this tribe do not all so exactly correspond as in land animals; for in these one in some degree leads to the other. Thus the teeth in the ruminating tribe point out the kind of stomach, cœcum, and colon; while in others, as the Horse, Hare, Lion, &c. the appearances of the teeth only give us the kind of colon and cœcum; but in this tribe, whether teeth or no teeth, the stomachs do not vary much, nor does the circumstance of the cœcum seem to depend on either teeth or stomach. The circumstances by which from the form of one part we judge what others are, fail us here; but this may arise from not knowing all the circumstances. The stomach, in all that I have examined, consists of several bags, continued from the first on the left, towards the right, where the last terminates in the duodenum. The number is not the same in all; for in the Porpoise, Grampus, and Piked Whale, there are five; in the Bottle-nose seven. Their size respecting one another differs very considerably, so that the largest in one species may in another be only the second. The two first in the Porpoise, Bottle-nose, and Piked Whale, are by much the largest; the others are smaller, though irregularly so.

The first stomach has, I believe, in all very much the shape of an egg, with the small end

downwards. It is lined every where with a continuation of the cuticle from the œsophagus. In the Porpoise the œsophagus enters the superior end of the stomach. In the Piked Whale its entrance is a little way on the posterior part of the upper end, and is oblique.

The second stomach in the Piked Whale is very large, and rather longer than the first. It is of the shape of an Italic *S*, passing out from the upper end of the first on its right side, by nearly as large a beginning as the body of the bag. In the Porpoise it by no means bears the same proportion to the first, and opens by a narrower orifice; then passing down along the right side of the stomach, it bends a little outwards at the lower end, and terminates in the third. Where this second stomach begins, the cuticle of the first ends. The whole of the inside of this stomach is thrown into unequal rugæ, appearing like a large irregular honey-comb. In the Piked Whale the rugæ are longitudinal, and in many places very deep, some of them being united by cross bands; and in the Porpoise the folds are very thick, massy, and indented into one another. This stomach opens into the third by a round contracted orifice, which does not seem to be valvular.

The third stomach is by much the smallest, and appear to be only a passage between the second and fourth. It has no peculiar structure on the inside, but terminates in the fourth by nearly as

large an opening as at beginning. In the Porpoise it is not above one, and in the Bottle-nose about five inches long.

The fourth stomach is of considerable size; but a good deal less than either first or second. In the Piked Whale it is not round, but seems flattened between the second and fifth. In the Porpoise it is long, passing, in a serpentine course, almost like an intestine. The internal surface is regular but villous, and opens on its right side into the fifth, by a round opening smaller than the entrance from the third.

The fifth stomach is in the Piked Whale round, and in the Porpoise oval: it is small, and terminates in the pylorus, which has little of a valvular appearance. Its coats are thinner than those of the fourth, having an even inner surface, which is commonly tinged with bile.

The Piked Whale, and, I believe, the large Whalebone Whale, have a cœcum; but it is wanting in the Porpoise, *Grampus*, and Bottle-nose Whale.

The structure of the inner surface of the intestine is in some very singular, and different from that of the others.

The inner surface of the duodenum in the Piked Whale is thrown into longitudinal rugæ or valves, which are at some distance from each other, and these receive lateral folds.

The duodenum in the Bottle-nose swells out into a very large cavity, and might almost be

reckoned an eighth stomach; but as the gall-ducts enter it, I shall call it duodenum.

The inner coat of the jejunum and ilium appears in irregular folds, which may vary according as the muscular coat of the intestine acts: yet I do not believe that their form depends entirely on that circumstance, as they run longitudinally, and take a serpentine course when the gut is shortened by the contraction of the longitudinal muscular fibres. The intestinal canal of the Porpoise has several longitudinal folds of the inner coat passing along it, through the whole of its length. In the Bottle-nose the inner coat, through nearly the whole track of the intestine, is thrown into large cells, and these again subdivided into smaller, the axis of which cells is not perpendicular to a transverse section of the intestine, but oblique, forming pouches with mouths downwards, and acting almost like valves, when any thing is attempted to be passed in a contrary direction: they begin faintly in the duodenum, before it makes its quick turn, and terminates near the vent. The colon and rectum have the rugæ very flat, which seems to depend entirely on the contraction of the gut. The rectum, near the vent, appears, for four or five inches, much contracted, is glandular, covered by a soft cuticle, and the vent is small.

I never found any air in the intestines of this tribe, nor indeed in any of the aquatic animals.

The mesenteric artery anastomoses by large branches.

There is a considerable degree of uniformity in the liver of this tribe of animals. In shape it nearly resembles the human, but is not so thick at the base, nor so sharp at the lower edge, and is probably not so firm in its texture. The right lobe is the largest and thickest, its falciform ligament broad, and there is a large fissure between the two lobes, in which the round ligament passes. The liver towards the left is very much attached to the stomach, the little epiploon being a thick substance. There is no gall-bladder: the hepatic duct is large, and enters the duodenum about seven inches beyond the pylorus.

The pancreas is a very long, flat body, having its left end attached to the right side of the first cavity of the stomach: it passes across the spine at the root of the mesentery, and near to the pylorus joins the hollow curve of the duodenum along which it is continued, and adheres to that intestine, its duct entering that of the liver near the termination in the gut.

Although this tribe cannot be said to ruminate, yet in the number of stomachs they come nearest to that order; but here I suspect that the order of digestion is in some degree inverted. In both the ruminants, and in this tribe, I think it must be allowed that the first stomach is a reservoir. In the ruminants the precise use of the second and third stomachs is perhaps not known; but digestion is certainly carried on in the fourth; while in this tribe, I imagine, digestion is per-

formed in the second, and the use of the third and fourth is not exactly ascertained.

The cœcum and colon do not assist in pointing out the nature of the food and mode of digestion in this tribe. The Porpoise, which has teeth, and four cavities to the stomach, has no cœcum, similar to some land animals, as the Bear, Badger, Raccoon, Ferret, Polecat, &c. neither has the Bottle-nose a cœcum, which has only two small teeth in the lower jaw; and the Piked Whale, which has no teeth, has a cœcum, almost exactly like the Lion, which has teeth, and a very different kind of stomach.

The food of the whole of this tribe is, I believe, fish: probably each may have a peculiar kind of which it is fondest; yet does not refuse variety. In the stomach of the large Bottle-nose I found the beaks of some hundreds of Cuttle-fish. In the Grampus I found the tail of a Porpoise; so that they eat their own genus. In the stomach of the Piked Whale I found the bones of different fish, but particularly those of the Dog-fish. From the size of the œsophagus we may conclude, that they do not swallow fish so large in proportion to their size as many fish do which we have reason to believe take their food in the same way: for fish often attempt to swallow what is larger than their stomachs can at one time contain, and part remains in the œsophagus till the rest is digested.

The epiploon, on the whole, is a thin membrane: on the right side it is rather a thin net-

work, though on the left is a complete membrane, and near to the stomach of the same side becomes of a considerable thickness, especially between the two first bags of the stomach. It has little or no fat, except what slightly covers the vessels in particular parts. It is attached forwards, all along, to the lower part of the different bags which constitute the stomach, and on the right to the root of the mesentery, between the stomach and transverse arch of the colon, first behind the transverse arch of the colon and root of the mesentery, then to the posterior surface of the left or first bag of the stomach, behind the anterior attachment. In some of this tribe there is the usual passage behind the vessels going to the liver, common to all quadrupeds I am acquainted with; but in others, as the small Bottle-nose, there is no such passage, which by the cavity behind the stomach in the epiploon of this animal becomes a circumscribed cavity.

The spleen is involved in the epiploon, and is very small for the size of the animal. There are in some, as in the Porpoise, one or two small ones, about the size of a nutmeg, often smaller, placed in the epiploon behind the other. These are sometimes met with in the human body.

The kidneys in the whole of this tribe of animals are conglomerated, being made up of smaller parts, which are only connected by cellular membrane, blood-vessels, and ducts or infundibula; but not partially connected by continuity of substance, as in the human body, the ox, &c. every

portion is of a conical figure, whose apex is placed towards the centre of the kidney, the base making the external surface; each is composed of a cortical and tubular substance, the tubular terminating in the apex, which apex makes the mamilla. Each mamilla has an infundibulum, which is long, and at its beginning wide, embracing the base of the mamilla, and becoming smaller. The whole kidney is an oblong flat body, broader and thicker at the upper end than the lower, and has the appearance of being made up of different parts placed close together, almost like the pavement of a street.

Whether being inhabitants of the water makes such a construction of the kidney necessary I cannot say; yet one must suppose it to have some connection with such a situation, since we find it almost uniformly take place in animals inhabiting the water, whether wholly, as this tribe, or occasionally, as the Manatee, Seal, and white Bear: there is however the same structure in the black Bear, which, I believe, never inhabits the water. This perhaps should be considered in another light, as Nature keeping up to a certain degree of uniformity in the structure of similar animals; for the black bear in construction of parts is, in every other respect as well as this, like the white bear.

The capsulae renales are small for the size of the animal, when compared to the human, as indeed they are in most animals. They are flat, and of an oval figure: the right lies on the lower and pos-

terior part of the diaphragm, somewhat higher than the kidney ; the left is situated lower down, by the side of the aorta, between it and the left kidney. They are composed of two substances ; the external having the direction of its fibres or parts towards the centre ; the internal seeming more uniform, and not having so much of the fibrous appearance.

The blood of animals of this order is, I believe, similar to that of quadrupeds ; but I have an idea that the red globules are in larger proportion. I will not pretend to determine how far this may assist in keeping up the animal heat ; but as these animals may be said to live in a very cold climate or atmosphere, and such as readily carries off heat from the body, they may want some help of this kind.

It is certain that the quantity of blood in this tribe and in the Seal is comparatively larger than in the quadruped, and therefore probably amounts to more than that of any other known animal.

This tribe differs from fish in having the red blood carried to the extreme parts of the body, similar to the quadruped.

The cavity of the thorax is composed of nearly the same parts as in the quadruped ; but there appears to be some difference, and the varieties in the different genera are greater.

The general cavity is divided into two, as in the quadruped, by the heart and mediastinum.

The heart in this tribe, and in the Seal, is probably larger in proportion to their size than in the

quadruped, as also the blood-vessels, more especially the veins.

The heart is inclosed in its pericardium, which is attached by a broad surface to the diaphragm, as in the human body. It is composed of four cavities, two auricles, and two ventricles: it is more flat than in the quadruped, and adapted to the shape of the chest. The auricles have more fasciculi, and these pass more across the cavity from side to side than in many other animals; besides, being very muscular, they are very elastic, for being stretched they contract again very considerably. There is nothing uncommon or particular in the structure of the ventricles, in the valves of the ventricles, or in that of the arteries.

The general structure of the arteries resembles that of other animals; and where parts are nearly similar, the distribution is likewise similar. The aorta forms its usual curve, and sends off the carotid and subclavian arteries.

Animals of this tribe, as has been observed, have a greater proportion of blood than any other known; and there are many arteries apparently intended as reservoirs, where a larger quantity of arterial blood seemed to be required in a part, and vascularity could not be the object. Thus we find, that the intercostal arteries divide into a vast number of branches, which run in a serpentine course between the pleura, ribs, and their muscles, so as to form a pretty thick substance. Those vessels, every where lining the

sides of the thorax, pass in between the ribs near their articulation, and also behind the ligamentous attachment of the ribs, and anastomose with each other. The medulla spinalis is surrounded with a net-work of arteries in the same manner, more especially where it comes out from the brain, where a thick substance is formed by their ramifications and convolutions ; and these vessels most probably anastomose with those of the thorax.

The subclavian artery in the Piked Whale, before it passes over the first rib, sends down into the chest arteries which assist in forming the plexus on the inside of the ribs ; I am not certain but the internal mammary arteries contribute to form the anterior part of this plexus. The motion of the blood in such must be very slow ; the use of which we do not readily see. The descending aorta sends off the intercostals, which are very large, and give branches to this plexus ; and when it has reached the abdomen, it sends off, as in the quadruped, the different branches to the viscera, and the lumbar arteries, which are likewise very large, for the supply of that vast mass of muscles which moves the tail.

In our examination of particular parts, the size of which is generally regulated by that of the whole animal, if we have been accustomed to see them in those which are small or middle-sized, we behold them with astonishment in animals so far exceeding the common bulk as the Whale. Thus the heart and aorta of the Spermaceti Whale appeared prodigious, being too large to be contained in a

wide tub, the aorta measuring a foot in diameter. When we consider these as applied to the circulation, and figure to ourselves, that probably ten or fifteen gallons of blood are thrown out at one stroke, and moved with an immense velocity through a tube of a foot diameter, the whole idea fills the mind with wonder.

The veins, I believe, have nothing particular in their structure, excepting in parts requiring a peculiarity, as in the folds of the skin on the breast in the Piked Whale, where their elasticity was to be increased.

The lungs are two oblong bodies, one on each side of the chest, and are not divided into smaller lobes, as in the human subject. They are of considerable length, but not so deep between the fore and back part as in the quadruped, from the heart being broad, flat, and of itself filling up the fore part of the chest. They pass farther down on the back than in the quadruped, by which their size is increased, and rise higher up in the chest than the entrance of the vessels, coming to a point at the upper end. From the entrance of the vessels they are connected downwards, along their whole inner edge, by a strong attachment (in which there are in some lymphatic glands) to the posterior mediastinum. The lungs are extremely elastic in their substance, even so much so as to squeeze out any air that may be thrown into them, and to become almost at once a solid mass, having a good deal the appearance, consistence, and feel of an ox's spleen. The branches of the

bronchiæ which ramify into the lungs have not the cartilages flat, but rather rounded; a construction which admits of greater motion between each. The pulmonary cells are smaller than in quadrupeds, which may make less air necessary, and they communicate with each other, which those of the quadruped do not; for by blowing into one branch of the trachea, not only the part to which it immediately goes but the whole lungs are filled.

The parts immediately concerned in inspiration are extremely strong; the diaphragm remarkably so. The reason of this must at once appear; it necessarily requiring great force to expand in a dense medium like water, especially too when the vacuity is to be filled with one which is rarer, and is to water a species of vacuum, the pressure being much greater on the external surface than than the counter-pressure from within. But expiration on the other hand must be much more easily performed; the natural elasticity of the parts themselves, with the pressure of the water on the external surface of the body, being greater than the resistance of the air from within, will both tend to produce expiration without any immediate action of the muscles.

The blow-hole or passage for air is next to be described. As the nose in every animal that breathes air is a common passage for the air, and is also the organ of smelling, I shall describe it in this tribe as instrumental to both those purposes.

There is a variety in some species of these animals, which is, I believe, peculiar to this order, viz. the want of the sense of smelling; none of those which I have yet examined having that sense, except the two kinds of Whalebone Whale: such of course have neither the olfactory nerves nor the organ: therefore in them the nostrils are intended merely for respiration; but others have the organ placed in this passage as in other animals.

The membranous portion of the posterior nostrils is one canal; but when in the bony part, in most of them, it is divided into two: the Spermaceti Whale however is an exception. In those which have it divided, it is in some continued double through the anterior soft parts, opening by two orifices, as in the Piked Whale; but in others it unites again in the membranous part, making externally only one orifice, as in the Porpoise, Grampus, and Bottle-nose Whale. At its beginning in the fauces, it is a roundish hole, surrounded by a strong sphincter muscle, for grasping the epiglottis: beyond this the canal becomes larger, and opens into the two passages in the bones of the head. This part is very glandular, being full of follicles, whose ducts ramify in the surrounding substance, which appears fatty and muscular like the root of the tongue, and these ramifications communicate with each other, and contain a viscid slime. In the Spermaceti Whale, which has a single canal, it is thrown a

little to the left side. After these canals emerge from the bones near the external opening, they become irregular, and have several sulci passing out laterally, of irregular forms, with corresponding eminences. The structure of these eminences is muscular and fatty, but less muscular than the tongue of a quadruped. In the Porpoise there are two sulci on each side: two large and two small, with corresponding eminences of different shapes, the larger ones being thrown into folds. The Spermaceti Whale has the least of this structure; the external opening in it comes farther forwards towards the anterior part of the head, and is consequently longer than in others of this order. Near to its opening externally, it forms a large sulcus, and on each side of this canal is a cartilage, which runs nearly its whole length. In all that I have examined, this canal, forwards from the bones, is entirely lined with a thick cuticle of a dark colour. In those which have only one external opening, it is transverse, as in the Porpoise, Grampus, Bottle-nose, and Spermaceti Whale, &c. where double, they are longitudinal, as in the Piked Whale, and the large Whalebone Whale. These openings form a passage for the air in respiration to and from the lungs; for it would be impossible for these animals to breathe air through the mouth: indeed I believe the human species alone breathe by the mouth, and in them it is mostly from habit; for in quadrupeds the epiglottis conducts the air into the nose. In the whole of this tribe the situation of the opening

on the upper surface of the head is well adapted for that purpose, being the first part that comes to the surface of the water in the natural progressive motion of the animal ; and therefore it is to be considered principally as a respiratory organ, and where it contains the organ of smell, that is only secondary.

The size of the brain differs much in different genera of this tribe, and likewise in the proportion it bears to the bulk of the animal. In the Porpoise, I believe, it is largest, and in that respect comes nearest to the human. The size of the cerebellum, in proportion to that of the cerebrum, is smaller in the human subject than in any animal with which I am acquainted. In many quadrupeds, as the Horse, Cow, &c. the disproportion between the cerebellum and cerebrum is not great, and in this tribe it is still less ; yet not so small as in the bird, &c. The whole brain in this tribe is compact, the anterior part of the cerebrum not projecting so far forwards as in either the quadruped or in the human subject ; neither is the medulla oblongata so prominent, but flat, lying in a kind of hollow made by the two lobes of the cerebellum.

The brain is composed of cortical and medullary substances, very distinctly marked ; the cortical being, in colour, like the tubular substance of a kidney ; the medullary very white. The substances are nearly in the same proportion as in the human brain. The two lateral ventricles are large, and in those that have olfactory nerves are

not continued into them, as in many quadrupeds; nor do they wind so much outwards as in the human subject, but pass close round the posterior ends of the thalami nervorum opticorum. The thalami themselves are large, the corpora striata small; the crura of the fornix are continued along the windings of the ventricles, much as in the human subject. The plexus choroides is attached to a strong membrane, which covers the thalami nervorum opticorum, and passes through the whole course of the ventricle, much as in the human subject. The substance of the brain is more visibly fibrous than I ever saw it in any other animal, the fibres passing from the ventricles as from a centre to the circumference, which fibrous texture is also continued through the cortical substance. The whole brain in the Piked Whale weighed four pounds ten ounces.

The nerves going out from the brain, I believe, are similar to those of the quadruped, except in the want of the olfactory nerves in the genus of the Porpoise.

The medulla oblongata is much smaller in proportion to the size of the body than in the human species, but still bears some proportion to the quantity of brain; for in the Porpoise, where the brain is largest, the medulla spinalis is largest; yet this did not hold good in the Spermaceti Whale, the size of the medulla spinalis appearing to be proportionally larger than the brain, which was small when compared to the size of the animal. It has a cortical part in the centre, and

terminates about the twenty-fifth vertebra, beyond which is the cauda equina, the dura mater going no lower. The nerves which go off from the medulla spinalis are more uniform in size than in the quadruped, there being no such inequality of parts, nor any extremities to be supplied, except the fins. The medulla spinalis is more fibrous in its structure than in other animals; and when an attempt is made to break it longitudinally, it tears with a fibrous appearance, but transversely it breaks irregularly. The dura mater lines the skull, and forms in some the three processes answerable to the divisions of the brain, as in the human subject; but in others this is bone. Where it covers the medulla spinalis, it differs from all the quadrupeds I am acquainted with, inclosing the medulla closely, and the nerves immediately passing out through it at the lower part, as they do at the upper, so that the cauda equina, as it forms, is on the outside of the dura mater.

The cutis in this tribe appears, in general, particularly well calculated for sensation; the whole surface being covered with villi, which are so many vessels, and we must suppose, nerves. Whether this structure is only necessary for acute sensation, or whether it is necessary for common sensation, where the cuticle is thick and consisting of many layers, I do not know. We may observe, that where it is necessary the sense of touch should be accurate, the villi are usually thick and long, which probably is necessary, because in most parts of the body, where the more

acute sensations of touch are required, such parts are covered by a thick cuticle; of this the ends of our fingers, toes, and the foot of the hoofed animals, are remarkable examples. Whether this sense is more acute in water, I am not certain, but should imagine it is.

The tongue, which is the organ of taste, is also endowed with the sense of touch. It is likewise to be considered, in the greatest number of animals, as an instrument for mechanical purposes; but probably less so in this tribe than any other. However, even in these, it must have been formed with this view, since, merely as an organ of taste, it would only have required surface, yet is a projecting body, endowed with motion. In the Spermaceti Whale the tongue is almost like a feather-bed. In the Piked Whale it is but gently raised, having hardly any lateral edges, and its tip projecting but little, yet, like every other tongue, composed of muscle and fat.

The tongue of the large Whalebone Whale, I should suppose, rose in the mouth considerably; the two jaws at the middle being kept at such a distance on account of the whalebone, so that the space between, when the mouth is shut, must be filled up by the tongue.

In this tribe of animals there is something very remarkable in what relates to the sense of smelling; nor have I been able to discover the particular mode by which it is performed. In many of this tribe there is no organ of smell at all; and in those which have such an organ, it is not

that of a fish, and therefore probably not calculated to smell water. It therefore becomes difficult to account for the manner in which such animals smell the water; and why others should not have had such an organ, which, I believe, is peculiar to the large and small Whalebone Whales.

The organ of smell would appear to be less necessary in these animals than in those which live in air, since some are wholly deprived of it; and the organ in those which have it is extremely small, when compared with that of other animals, as well as the nerve which is to receive the impression.

The ear is constructed much upon the same principle as in quadrupeds. The organ consists of the same parts as in the quadruped; an external opening, with a membrana tympani, an Eustachian tube, a tympanum with its processes, and the small bones. There is no external projection forming a funnel, but merely an external opening. We can easily assign a reason why there should be no projecting ear, as it would interfere with progressive motion; but the reason why it is not formed as in birds, is not so evident; whether the percussions of water could be collected into one point as air, I cannot say. The tympanum is constructed with irregularities, so much like those of an external ear, that I could suppose it to have a similar effect. The immediate organ is, in point of situation, to that of the tympanum, superior and internal as in the quadruped. The tympanum is open at the

anterior end, where the Eustachian tube begins. The whole function of the Eustachian tube is perhaps not known; but it is evidently a duct from the cavity of the ear, or a passage to the mucus of those parts: the external opening having a peculiar form, would lead us to believe that something was conveyed to the tympanum.

The part containing the tympanum is a thin bone, coiled upon itself, attached by one end to the portion which contains the organ; and this attachment in some is by close contact only, as in the Narwhal; in others the bones run into one another, as in the Bottle-nose and Piked Whales.

The immediate organ of hearing is contained in a round bony process, and consists of the cochlea and semicircular canals, which somewhat resemble the quadruped; but besides the two spiral turns of the cochlea, there is a third, which makes a ridge within that continued from the foramen rotundum, and follows the turns of the canal.

The eye in this tribe of animals is constructed upon nearly the same principle as that of quadrupeds, differing however in some circumstances; by which it is probably better adapted to see in the medium through which the light is to pass. The crystalline humour resembles that of a quadruped, but whether it is very convex, or flattened, I cannot determine; those I have exa-

mined having been kept too long to preserve their exact shape and size. The vitreous humour adhered to the retina at the entrance of the optic nerve. The optic nerve is very long in some species, owing to the vast width of the head.

END OF VOLUME II.

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